

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—22ND YEAR.

SYDNEY, SATURDAY, APRIL 6, 1935.

No. 14.

Table of Contents

[The Whole of the Literary Matter in THE MEDICAL JOURNAL OF AUSTRALIA is Copyright.]

ORIGINAL ARTICLES—	PAGE.	SPECIAL ARTICLES ON TREATMENT—	PAGE.
"Mental Hygiene", by HARVEY SUTTON, O.B.E., M.D., Ch.B., D.P.H., B.Sc.	417	The Treatment of Menopausal Symptoms	440
"Tumour of the Brain as met with in General Practice", by LEONARD B. COX, M.D., M.R.C.P.	425	BRITISH MEDICAL ASSOCIATION NEWS—	
"Whooping Cough, with Particular Reference to Pertussis Vaccine", by IVAN BLAUBAUM, M.B., Ch.B.	432	Scientific	441
		Nominations and Elections	443
REVIEWS—		MEDICAL SOCIETIES—	
A Manual on Diabetes	434	The Medical Sciences Club of South Australia . .	443
Practical Nursing	434	CORRESPONDENCE—	
NOTES ON BOOKS, CURRENT JOURNALS AND NEW APPLIANCES—		An Interesting Scalp Case	443
A Book of Essays	434	The Diabetic Association	443
LEADING ARTICLES—		The Aetiology of General Paralysis of the Insane .	444
Visceral Neuroses	435	The White Man in the Tropics	444
CURRENT COMMENT—		OBITUARY—	
The Cerebro-Spinal Pressure in Arterial Hyper- tension	436	David Montgomerie Paton	444
The Diabetic Journal	437	John Stewart Merrillees	446
Annual Meeting of the British Medical Association, Melbourne, 1935	437	NOTICE	446
ABSTRACTS FROM CURRENT MEDICAL LITERATURE—		DIARY FOR THE MONTH	446
Bacteriology and Immunology	438	MEDICAL APPOINTMENTS VACANT, ETC.	446
Hygiene	439	MEDICAL APPOINTMENTS: IMPORTANT NOTICE	446
		EDITORIAL NOTICES	446

MENTAL HYGIENE.¹

By HARVEY SUTTON, O.B.E., M.D., Ch.B. (Melbourne),
D.P.H. (Melbourne), B.Sc. (Oxon),
*Professor of Preventive Medicine, University
of Sydney.*

MODERN psychologists, whether adhering to the school of Freud or of Jung or of Adler, all agree in one principle at least, the dominating influence of the early years of life, the period of active growth and of habit formation; a period, too, when the operation of sex taboos and the developing interest in sex are primary sources of conflict.

So many of the fears which operate forcibly on the adult were created in the garden of childhood; for example, fear of the dark, fear of a height. Even delinquency has been ascribed to conflicts in the conscious regarding sex impressions and repressions.

¹Read at the annual meeting of the Victorian Council of Mental Hygiene on November 9, 1934.

More and more the actual disturbance of mind is found to have its origin many years earlier, the breakdown being the culmination of long-standing changes and the apparent cause only the straw that breaks the camel's back. The study of children is an essential, therefore, both in the prevention and the control of mental disorder in adults.

The idea of the sound mind in the sound body was crystallized many centuries ago by the Latins in the well known maxim. Long before that the Greeks had upheld in their training of youth the harmonious development of both physical and mental activities and the ideal of the beautiful and the good. The interdependence of body and mind has long been recognized, though their relative importance has been variously evaluated.

Unfortunately Christian religious systems have too often treated the body as something vile and almost beneath contempt. The Christian Scientist attempts to ignore the body and deny, in defiance

of common sense, its manifest needs or, rather, its essential reactions to unfavourable influence by pain or disease. He is ignorant of the importance of pain as a danger signal, of the liability to wasting and death of the structure that no longer arouses painful sensations, or of the peculiarly painless and insidious onset of many dangerous diseases, such as cancer. The Christian Scientist's assertion that pain and disease, if they do exist, are virtually a mental fiction and only exist because of the failure in faith of the individual, seems singularly unfair in the case of suffering babes and little children.

Indeed, whatever phase of mental hygiene we take, the paediatrist who comes into close contact with physiological variations or pathological departures in children most clearly realizes this essential integration or unity of mind and body. Take the influence of diet and diet deficiencies on the behaviour and conduct of children. We typically describe in rickets the bony deformities which the lack of vitamin *D*—calciferol—gives rise to by limiting the deposit of calcium (lime salts). But lime is essential to the growth and stability of the nervous system. Inability to use calcium gives rise to spasmodic conditions, to convulsions, and to every evidence of an unstable nervous system. Such children, too, are retarded mentally quite as much as physically. Indeed the mental failure is more important than the physical, for the return to normal by return to an adequate diet is quicker and more effective in the bones than in the brain. Just as in adolescence lateral curvature of the spine is a late rachitic manifestation, so we may also assign much of the neurasthenia and hysteria at this age to a similar origin.

Every deficiency disease shows effects on the central nervous system. Instance the depression, fatigability, lack of interest and of initiative in scurvy, the neuritis in the nerves and depression in beri beri, and the dreadful effects of pellagra on the nervous system, with the appearance of progressive chronic dementia in advanced cases. Conversely, we can realize the importance for the creation of a healthy, stable, active mind of the provision of an adequate, vitamin-rich diet.

Much play has been made of the influence of the endocrines on growth. This orchestra of chemical controllers is conducted by the thyroid, with the pituitary gland as first violin. In the symphony of life we can see the rise and fall of the various themes—an early, inconspicuous, steadying effect of the thymus, the later profound rhythms of the sex organs, the sturdy throbbing impulses of the adrenals, and many others. Personality and character are outward evidence of these internal chemical harmonies and discords. At present the thyroid is practically the only hormone in use in treating developmental difficulties and gives relief to cretinism and hypothyroid dulness. Some day, it seems possible, the other endocrines will find their place in the treatment of growth anomalies and in controlling the tides of life in those critical

periods—adolescence, marriage, the climacteric—when maladjustment so often occurs. Already the supposed effects of hormone treatment in prolonging life and retrieving senility are eagerly sought by many. Important as it may be to live longer, to live better is still more important.

Variations in the interaction and balance of the endocrine glands may produce demonstrable effects. We recognize sex precocity and sex delay. The former is seen in adrenal (cortical) excess, the latter in pituitary disturbance (anterior lobe), as in the "fat boy" or "fat girl" of hypopituitary type. Adrenal excess tends to produce a smaller, very active, energetic, inquisitive type, very interested in sex. Hypopituitarism is found in boys and girls with large bony frames and still greater weight, and sex unconsciousness. When they marry later, marital life is normal in every respect. The existence in school children of sex precocity and of sex delay is one of the stumbling blocks in sex education, sex behaviour and sex control.

In the preschool period the child first finds itself an entrant into a strange world, exposed to the handicaps of an incomplete diet. The rapid growth of brain in the first three years transcends that of any other organ. Without proper supply of growth factors in the diet the optimum results cannot be attained. Not less than 25% of children still show definite evidence of mild rickets on school entrance, while in the second year of life the figure at the present time is stated to be about 50%. The child, too, must pass through the fire of the common infections which kill some and damage many. At school entrance the school medical officer finds about 30 out of every 100 children requiring medical assistance, while 80% to 90% must attend the dentist. It is at this age, too, that asthma and stammering most commonly arise—both conditions with strong nervous associations.

Adler contends that before the sixth year the individual develops his own definite life pattern, directed toward a definite goal; in later life he will make his experience fit into his own pattern. This is above all others the time of habit formation. Emerging from life as a helpless parasite on his mother's breast, the child extends his horizon to discover himself, his parents and family, his home, and, very gradually, other children and the street. The rapid brain development and his realization of himself only demonstrate his own helplessness. All important for the future is his struggle for independence, for he must be about his own business; hence the cramping effect of repression on the one hand and of pampering on the other. No city in Australia has made adequate provision for playing space for these toddlers, yet it is on the playground that they learn to live. Play is the demand of developing muscles and nerves for function, a demand that must be met.

Perhaps the greatest advance in the future in the creation of physical and mental health will come from the nursery school, the product of the genius

of Margaret McMillan. It successfully fills the greatest gap in official health control, the period between the first and the sixth birthdays. The pre-school children in Australia number over 600,000. While the majority of the 100,000 babies are reached by the infant health centres, and a million children are attending school, only about 5,000 preschool children are looked after by free kindergartens and day nurseries. It is true that for many thousands of babies control extends at the infant health centres well into the second year of life. The fact remains that over half a million children are neglected, though a method of control both ideal and practical has been devised. The nursery school is the answer to the slum. Here, amidst healthy and beautiful surroundings, with training in healthy habits and with happy play, the child's personality blossoms at its best.

Myopia.

The myope or short-sighted boy has a simple structural change in his eyeball, perhaps due to inborn tendencies, by which the eye, instead of being nearly a sphere (an oblate spheroid like the earth), is elongated. The distance from the glassy front to the sensitive membrane at the back is relatively too long for the refractive power of the lens and other transparent media. Hence the boy readily sees things close up to his eyes, but has difficulty with distant objects. The result in a moderate degree of myopia is to find the boy's horizon at twelve feet or even less. He cannot see the blackboard unless seated in the front rows, and occasionally this retards his school progress. This may be more than neutralized by his preference for near-sighted action, such as reading, so that the child quite often becomes a bookworm and a keen student, and many become attracted to teaching as a profession, which is rather unfortunate, in that myopia of more than slight degree debars from the teaching service. The German student and professor and the Chinese mandarin furnish typical examples of myopia.

Less realized but even more important is the effect of myopia on the child's activities. Most of our games and sports represent a ball or object coming from a distance—cricket, football, tennis, hockey, basketball, catches, chasing, and so on. The short-sighted boy does not get a clear picture of the approaching object until it is right upon him—within twelve feet or so. Obviously his reaction time is not short enough to allow him to respond quickly enough, and so he is a "muff" at games. Few children will keep up a game at which they are hopeless and frequently laughed at by the others. Ridicule is most discouraging at any age. The result is that the child drops right out of games and his interest in reading becomes all the more intensified; indeed, he is just as definitely immobilized as if his legs had been cut off. The influence on personality and character follows. These children lose the healthy, if boisterous, contact with their fellows, the physical, mental and moral training which

games may give. Exercise in the sunshine and fresh air with the stimulus of amusement, interest and competition; the alertness that copes with the unexpected and the appreciation of the strategy of the game; the corporate feeling, eliminating selfishness, which team work gives; the equanimity that allows one to win without boasting, to lose without recrimination; the feeling of friendly rivalry and of good fellowship; the ready acceptance of the penalty that mistakes bring; the ability to take hard knocks and yet keep one's temper; the capacity to appreciate good play, even in one's opponents; all, indeed, that is summed up in playing the game—these experiences are not for him.

The tendency, therefore, is to get a "shut-in" personality, living an existence of fantasy, constructing a world, in second-hand fashion from paper description, the typical egocentric introvert. Of course, the result is not inevitable, but undoubtedly very many myopes show the effect of this bias. A miserable lengthening of the eyeball of perhaps one-twelfth to one-twenty-fifth of an inch may thus warp the outlook and whole future of the child, and this without any direct effect on general health or development of intelligence. Difficulties were made to be overcome. We all have difficulties, but these unrecognized defects with constant unconscious action are very complete in their effects.

Much may be done, provided these tendencies are recognized and controlled. The sense of inferiority which failure in games may often cause in the school world may be met by encouraging the myope to take up games where his eye defect will not operate. In athletics, running and cycling should be satisfactory, but few myopes take them up. Boxing is excellent unless myopia is advanced, when detachment of the retina is a possibility. Wrestling, swimming and walking are well suited. One may note that myopes with properly fitting glasses have played good tennis, and a few have been good cricketers (batsmen).

A good physical training teacher can thus restore to the myope his mobility and materially help in the all-round building of character. Obviously the early detection of the defect and the realization by the parents and teachers of its presence and effects must come first, thus emphasizing the benefit of regular routine examination of school entrants and older school children. The later examinations and comparison of records may demonstrate that the defect is progressive—a most important fact. Educationists can help to control this contraction of visual horizon during the school period, which gave the condition the fallacious name of "school myopia"; for the condition commonly originates before the school age, and though its increase during the school age is common, it often increases rapidly just after leaving school. Cohn showed in 1866 how school conditions and equipment, unsuitable print, poor lighting, bad ventilation, tired postures, tight collars and impaired health all accelerated the process.

In recent years sight-saving schools have been developed in large centres (we have no school in Australia), where the technique of teaching is modified to permit of the maximum use of oral methods and the minimum use of vision. Writing is done on the blackboard or typewriter; handicrafts are included. The children learn by listening.

Occupational choice and training should similarly take this defect into consideration, close detailed work under poor lighting conditions being prohibited when the condition is well defined and especially when it is progressive. It is only fair to note that it has been asserted that a moderate degree of non-progressive myopia gives a capacity for fine handwork and for scientific investigations in the laboratory. Similarly, work where recognition at a distance is essential, for example, in the military, rifle shooting or aviation would be unsuitable, whereas camp inspection, engineering and ordnance work could be well done.

This defect has been dealt with at some length as showing its widespread repercussion on the whole life story of the individual, his training and future, his attitude to the world. Its influence in the creation of mental health is undoubted.

No doubt astigmatism and long-sightedness also have their effects, especially astigmatism. In my own observation I have met three examples of high grade astigmatism. All three persons had great difficulty in recognizing any but close acquaintances if they met someone in the street, and even in a room if the light were not perfectly good. Thus they got a reputation for aloofness and self-importance, if not actual rudeness, which was quite unjustified. All three were ultra-scientific in their attitude to work, and found decision difficult. They could see so many reasons for not doing it that they often failed to do the obvious. Life became to them a tissue of puzzling possibilities instead of fairly reasonable probabilities. In medical men such an attitude is the despair of the so-called lay director, who, expecting a recommendation, receives a scientific argument; for the bread of action he receives the stone of indecision. Hence has arisen the too prevalent opinion that doctors are not good administrators. These people are the joy of the ingenious barrister, and at times a nuisance to their patients. I do not wish to suggest that dogmatism is an ideal or that the doctor should be reduced to a penny in a slot machine, but if statistical analysis means anything, it is the appreciation of probability of causation and of the significance of findings. I cannot help feeling that full correction of astigmatism early in the training of such people might have prevented this blurring, not only of the visual picture, but of the picture of life, and helped to a clearer conception as well as clarity of thought and decision.

Colour Blindness.

Another little-explored field is colour blindness. Here is a defect common in males and rare in females. Dr. Christie gives the percentage in

Adelaide schools as 6.55% for boys and 0.74% for girls. In male teachers the ordinary finding of definite red-green confusion is 3%; in women teachers occasional lack of full colour sensitiveness was noted, but marked failure was very rare. English figures give the incidence as four women per thousand. The standard, however, is not severe, as colour blindness is considered of detriment only for kindergarten teachers, few of whom are men. Of some 120 women medical students, I have met one who was definitely colour blind. Both of her parents belonged to families in which colour blindness frequently occurred.

Dr. G. H. Taylor, from a long experience of colour-blind testing of railway employees, claimed that to some extent one could pick out a colour-blind person on sight by the curious mask-like, expressionless face. The colour blind suggested a listening expression, the colour efficient a watching expression. The voice, he says, is monotonous and wanting in emotional quality; the smile quickly disappears. The tone deaf show a similar expression, but are more responsive and their voice is more modulated. The colour blind are never tone deaf, and *vice versa*, and stammering is less common. The colour blind, he says, are stable in their official duties and are not the type from which emotional firebrands are made. Apparently they do not "see red".

Just what is the colour blind view of life? No one seems quite to know: perhaps it approaches the monochrome. Possibly milder tones are as satisfying to the colour-blind person as more lurid tints are to the normal. It has been suggested that Quaker grey, affected by the Quaker maidens, may be as stimulating as scarlet to the Quaker youth, who, by inbreeding, is frequently colour blind (Dalton, who first described the condition in himself, was a Quaker). As remarked by Taylor, many colour-blind persons are above the average in intelligence.

The influence of colour blindness on vocation is definite. The choice of red to symbolize danger and green safety may be justified from analogy to fire *et cetera*, but its choice for traffic purposes was unfortunate. In air transport the yellow-blue contrast has, I believe, been favoured, and avoids the difficulty with this common type of red-green colour blindness. Red-green colour blindness thus eliminates from the list of suitable occupations engineering and many railway jobs; nor can red-green colour-blind persons be employed as sea pilots, ships' officers, in the navy, in drapery stores, as chemists *et cetera*. I know four doctors who were refused for appointments in health services in which examination for police and referee opinions on pilots were included in the duties of their office. The effect of colour blindness on the attitude to life and behaviour generally, suggested by Taylor, still awaits investigation.

It is not my intention to elaborate the question of vocational suitability, but reference may be made to the lists issued by the school medical services

both in New Zealand and in Victoria, outlining suitable and unsuitable occupations according to the various defects of vision, hearing *et cetera* found in school children.

Oto-Rhino-Laryngological Defects.

Nose and throat defects (chiefly unhealthy tonsils and adenoids) have attracted attention because of their production of structural deformities of nose, palate, face and chest, because of the increased susceptibility of these patients to infection and the frequency with which they become carriers of virulent organisms, such as those of diphtheria, streptococci *et cetera*, of which they probably form the chief reservoir in the community.

The chief problem in nose and throat disease is not bony deformity or infection, but the effects on the central nervous system. Mouth breathing by itself seems of little importance, judging by its prevalence as a habit in normal children or amongst athletes and politicians in action. What really counts is the effect on sleep. The story of disturbances of sleep is almost constant. At night the child, unable to breathe through its nose, must breathe through its mouth. Snoring, not the quiet, sleepy, healthy effort, but a noisy, strangling, even orchestral performance is common, for the relaxed soft palate acts in valve fashion, producing respiratory obstruction. Hence the reduction of internal pressure during the inspiratory struggle causes the chest to retract, and pigeon breast appears in the rachitic. In less plastic ribs Harrison's sulcus (grooved chest) and even funnel chest may occur, the chest dinting just where the stress is great and the chest frame weakest. But the nerve cell is most susceptible to respiratory difficulty, and so the constant recurrence night after night for month after month and year after year eventually causes a draining of reserves and the development of instability. We constantly hear complaints of night terrors. These are vivid, terrifying visions, for the child sees something that holds it panic-stricken, though it does not seem to be able to describe it when it wakes fully. Restlessness, sleep talking and sleep walking are common and typical signs of instability, while nocturnal enuresis gives us further evidence of disturbed control over the sphincters. The test of successful surgery is not the mass of adenoids removed and the reestablishment of free nasal ventilation, but, most of all, restoration of adequate and sound sleep.

This sleep disturbance leaves the headache next morning called by the Germans "*Katsenjammer*" or, in English, "the morning after the night before". No wonder the child, in its drowsy condition, is not interested in its lessons next morning, though it may do somewhat better in the afternoon. Hence retardation at school is frequent, while these defects occur twice as often in delinquents. At the Metropolitan Shelter attached to the Children's Court, 13% of delinquents had nose and throat defect requiring operation, and an additional 37% had

been operated on already, giving 50% in all. The same standard applied to the ordinary school children gave a figure of 20% to 25%. Altogether adenoids form a problem in mental health of some magnitude: probably at least 25% of children need operative treatment if their future is to be assured.

Of some interest is the influence of partial deafness, especially of one ear only. For some years I examined incorrigible boys of fourteen or fifteen years of age who were signed on the *John Murray* training ship by their parents. None of these boys was brought before the court, though analogies with delinquent groups could be traced. In general, family conflict rather than parental neglect seemed common, while the group in general was more intelligent, though the school record was often unsatisfactory, largely owing to truancy or to resistance. The finding for partial deafness in these boys was strikingly high—60%, as opposed to 8% in ordinary boys of the same age. Their story constantly showed disagreement with the teacher, truancy, and the unsavoury companions the truant so often makes. Further inquiry showed that the attitude developed by the defect decided at least in part their behaviour. Typically the deaf person tends to be suspicious. Not appreciating fully what is said, he may blame others and suspect them of trickery and talking behind his back.

While the blind person freely acknowledges defective vision, the deaf person rarely accepts the finding of deafness, and often will insist on a further test. The blind insane are docile, yet the deaf insane are often difficult to handle because of suspicions of persecution *et cetera*.

No boy is so misunderstood as the boy deaf in one ear only; even his own mother may say: "Oh, he can hear all right when he wants to." The teacher who gets a prompt response and then a complete disregard of his instructions, according to which ear is the receptor, regards the boy's action as deliberate and wilful, and naturally keeps a close eye on him. Boys have a keen sense of justice; even the flogging master was accepted, provided he was a "just beast". When the boy considers the teacher has a "down" on him and so finds school unpleasant, he will, if vigorous, seek fresh fields and pastures new. This is substantially the story told by many of these incorrigible lads. The simple unrecognized defect had been responsible for truancy and all its associated happenings.

Stammering.

One defect, however, deserves special consideration, that of stammering. Dr. Leary's papers on this subject are most illuminating and excellent studies in mental hygiene. Here is a difficulty rather than a defect. No organic failure exists either of the respiratory or voice apparatus or, for that matter, of the nerves or central nervous system. There need be no association with failure in general health or general intelligence. It is a social maladjustment, for it does not occur when the person is alone, as

Demosthenes probably was when he conquered his stammering by orating to the sad sea waves. The presence of others, combined with some sudden, unexpected demand for speech, especially under emotional stress, may occasion it in perfectly normal persons. Fluency in the lover proposing is more characteristic of the stage than of real life. Stammering is greatly influenced by primitive exercises, such as rhythm or singing. The stammerer may be an excellent singer and here has no difficulty in starting (stammer) or in stopping (stutter). Leary has shown the control by rhythm. After all, all speech is rhythmic. A recent talkie demonstrated how the Frenchman talks like a machine gun, the Englishman works on an emphasis like a Morse code of long and short beats. Each one of us has a natural and distinctive, yet unconscious, rhythm of his own, and the training consciously of rhythm may be of the utmost value to the stammerer.

Stammering seems more a failure in confidence, an anxiety neurosis, and definitely susceptible to suggestion. Its characteristic tendency to spasm, fixation of the chest in the expiration position, the tenseness of accessory muscles in the neck and arm, all largely demonstrate the failure in smoothness of control. The response of the stammerer in classes at Saint Thomas's Hospital, where the atmosphere of success stimulates hope and confidence, has come as a surprise to many who have preferred individual training. This experience with the teaching of stammerers in groups, however, corresponds to the beneficial effects of colony life on epileptics. It is association with normals that is trying; association with others who have like difficulties makes for the removal of restraints and inhibitions.

After all, speech is merely the externalization of thought; and the hypothesis of stammering in speech being symptomatic of stammering in thought is utilized, together with suggestion, in the phrase: "When my feeling of ease is intense enough the thought flows over my lips of itself." Some prefer to regard the primary failure as the result of careless and incomplete habits of language. They enforce a silent period and then teach the person their own language over again, starting with the kindergarten and working right through up to everyday level.

Severe head injury and so-called shell-shock have occasionally been associated with the development of stammering in adults; the condition readily disappears.

Pavlov would have us classify stammering as an inhibition phenomena in conditioned reflexes. Whatever attitude we take to its causation and management, everyone agrees to the profound influence it may have on behaviour and personality. This is graphically related by Leary. Agoraphobia (the avoidance of groups) is common. Work in ordinary classes can be almost intolerable misery, even causing suicide to be contemplated or attempted. This sensitiveness to ridicule is exaggerated and in general unjustified. At any rate, it is inadvisable

(without previous warning of the other's defect) to introduce two stammerers to each other. It has driven doctors from general practice to specialize in laboratory work, X ray work *et cetera*, where speech is of minor importance. Few conditions have caused so much mental misery or so greatly influenced the whole life of the human being as stammering. The creation of proper habits of speech is an important function of mental hygiene.

Stammering and Left-Handedness.

The position of the left-handed person in relation to stammering seems to have given rise to difference of opinion. The figures in New South Wales show three to four in every hundred ordinary persons to be left-handed, but fourteen in every hundred to be stammerers.

Recent evidence suggests a definite tendency for stammering to develop when by vigorous moral suasion or actual force the attempt is made to change a left-handed into a right-handed writer. The proportion of stammerers in right-handed and unchanged left-handed persons is identical; but in left-handed changed to right-handed writers the percentage nearly trebles when pressure or penalty produces a change at home or at school. The enforced training of the right hand in naturally left-handed children is evidently undesirable, though still frequently attempted.

Education and Treatment.

Provision for the permanent or semi-permanent life of the child, for the whole period of growth or for several years, may be indicated for special types of children, but not for the normal child. These special types of children possess some defect or disability or disease which requires special education with or without medical treatment, or segregation may be necessary, either for their own sake or for that of other children, or both.

Circumstances naturally affect the choice of a residential as opposed to a day school. Special schools are as a rule only possible in large centres of population, where at least 30, but for preference 60 to 120, of the special type of children can be collected together. Hence residential schools are essential for country cases.

Persons with gross defects requiring special education and also medical treatment in residential institutions include: (1) the blind, (2) the deaf and dumb. Those treated in special schools or classes include a number of types: (3) myope or sight saving, (4) hard of hearing. These last two types are difficult to handle in the blind or deaf and dumb institutes, for they still cling to the remnants of these defective senses instead of relying on special methods.

Further types include:

(5) Cardiac and rheumatic cases (for which there is no school in Australia) for medical supervision and treatment.

(6) Cripples. The combination of day or residential school with the orthopaedic hospital clinic is essential if training in intelligence and vocational training are to be provided as well as the treatment of the deformities, paralysis *et cetera*.

(7) The delinquent and truant. In these residence lasts from six months to two years; the disciplinary treatment should, of course, be educative and formative.

(8) Epileptics. The colony is ideal in lessening the fits and insuring happiness. The whole life of the individual should be spent in the colony.

(9) The feeble-minded. The mental defective finds his best chance for happiness and success by special education, vocational training and life amongst his own fellows.

(10) Those affected by malnutrition. The open air school or preventorium for three to six months is of real value in improving anæmia and in the prevention of tuberculosis.

(11) Stammerers. Here the day class is preferred.

(12) Those suffering from trachoma. The success in Brisbane of the trachoma residential school, where diet, education and treatment by the oculist could be combined, is striking.

(13) Those affected by tuberculosis. At Waterfall Sanatorium a school is established and children remain many years. The tuberculous child must be separated from others for their protection.

(14) Those affected by venereal diseases. It is contrary to law to board out this type of child, and obviously it would be quite unjustifiable.

Further examples are sufferers from (15) leprosy, and certain special instances of (16) carriers of diphtheria, and also (17) ringworm.

(18) The care of the orphan and other children whose parents have deserted or cannot maintain them will always be a community problem. The first milestone in child welfare was undoubtedly the foundation of the London Foundling Hospital in 1751. Yet the institutional treatment of babies proved so hazardous that Malthus could, at the end of the century, point out that the quickest way to get rid of unwanted children would be by the multiplication of foundling hospitals. Even today their work is often marred by catastrophes.

Many still believe in residential institutions for healthy children under fourteen. Fortunately child welfare departments are more and more supporting a policy of boarding out, treating institutions as special temporary abodes of children, clearing houses for new arrivals or those changing or requiring treatment or discipline, but not permanent abodes, except for special types.

The time has come for a review of our activities with regard to the community or organized care of children, both sick and healthy. In the long run this will mean both economy and efficiency. The permanent need is investigation to define more accurately the problems and also to seek their origin, their prevention and their control. This is specially desirable with regard to the use of these

residential institutions in the development and training of children. No group of institutions is so popular, whether judged by public sentiment or by that severe test, the support from the public pocket. To what groups of children are residential institutions essential or desirable? To what groups are they unsuitable or even undesirable?

Children on their part have certain rights. No child should be exploited in the name of a creed, religious or political, or for profit. Every child has the right to mix with his normal fellows in the house and in the world. Every child, every human being, must educate himself. That is his job. Our duty is to insure to him that wide range of human contacts, that contact with a free world, with someone who believes in his welfare and future, with someone to whom he can talk without restraint and in confidence. One looks in vain in even the best institution for the full satisfaction of these rights, yet even the second-rate family can amply provide them.

In the best type of institution one is shown excellent buildings, bright, cheerful and healthy, on a site free from the smoke and noise of cities. Often the children live in cottage groups with central social activities and entertainments, the staff is personally interested in and keen on their welfare; yet even the best institution fails to reach the standard of the ordinary home. We find these children typically overweight, with greasy skins, the overweight due to lack of free play and exercise. Their attitude to life is strangely uniform and limited. As a preparation for life in the outside world the method seems wanting. After all, what is our objective? What did Nature expect of parents? Our objective should be development of intelligence and, even more than that, personality and character. Mental failures are far more often emotional failures than intellectual failures. The responsibility of parents is not only to feed and clothe and shelter their offspring, but to provide for them healthy social contacts, a sound and liberal education and, finally, to develop in them independence to stand on their own feet, and stability to meet the strains and stresses of life.

In the second and third rate institution the child is virtually in prison. Inspection has frequently revealed verminous conditions, epidemics of eye discharge, of impetigo and other infections. Owing to the lack of hot water the children are often unclean and the smell of clothes and of dormitories is unmistakable and characteristic. The buildings and dormitories are bare and forlorn, the facilities for play and entertainment limited, the diet is monotonous, clothing uniform, the children themselves are dull and unresponsive as ditchwater, the staff, even if interested, is lacking in tact and sympathy. What a life for any child to be forced to lead.

The delinquent still represents an imperfectly solved problem. At the Truant School 24% were delinquents. Intelligence tests gave similar results

for the delinquents, and school retardation was marked. Truancy is not merely absence from school, but too often the contact with the "push" and bad companions. Behind both truancy and delinquency is parental failure as the dominant element; but constantly the visit to the home reveals the vicious circles of poverty and large families, overcrowding and lack of amenities in home life, intemperance, and lack of playing spaces, while increased physical defect and inefficiency form the background.

The two years after leaving school prove a peak in the frequency of delinquency, showing the protective influence of the school. For every reason day schools should accommodate all children up to sixteen years. It would make an immense improvement in general domestic, commercial and technical education, and has been legalized in Great Britain. Older boys attend farm homes and similar training schools. Much difficulty would be overcome by better classification. For example, there is a world of difference between a boy of fifteen and a youth of seventeen. The Child Welfare Department controls children up to the eighteenth birthday, and many of its troubles would cease if age classification were combined with a study of maturity, both physiological (especially from the adolescent point of view) and mental. The intelligence testing and physiological estimate of the lad and youth, as well as the girl and young woman, no doubt require extended investigation, but proper grading and separation on these lines is essential to efficient supervision and discipline. It is one thing to discipline a school boy of fifteen and another to discipline a fully grown, powerfully built young man of nearly eighteen. Recent happenings have demonstrated the difficulties of control in these later ages.

I believe that one of the greatest achievements of this century will be the discovery of the family and of the importance of parenthood and of the home. The study of children, which began in the nineteenth century—the first complete study of the growth of mental life of children is to the credit of Charles Darwin, 1869—has revealed their needs and their difficulties. The everyday problems of the everyday child, as Thom puts it, concern obedience and discipline, fear and anger, bad habits *et cetera*, and their frequency has given rise to "child guidance" clinics. In actual fact the work of these clinics is the study of the child's surroundings in the home, and especially the investigation, training and guidance of parents.

One of the good effects of the declining birth rate is to make parenthood a deliberate device, almost a privilege rather than an undesired accident, and, as children are fewer, to enhance their importance and their care.

The worst feature of our declining birth rate is the increased number of one-child families, a condition which only the careful parent can utilize. The solitary child, whose only companions are grown-ups, in every way deserves our pity and our help. The main business of the child is getting its own

machinery working and, secondly, building bridges to other worlds—mainly children of his own age.

Parenthood is the one function for which we receive no training. Even the teaching of mothercraft is chiefly concerned with baby care and management. We learn, of course, by experimenting on our first born. Hence to be born late in the family seems a positive advantage, as the parents have probably learnt their job by then.

The study of delinquency demonstrates the unmistakable effect of parental failure. Of the parents of delinquents, 60% show failure, usually on the part of the father. The work of the school medical service lays further responsibilities on parents, and the work of the school nurses is chiefly concerned with the mother. The various health visitors, tuberculosis nurse, probation officer, make the family their central point of study and influence. The wealth of experience which these various agencies are collecting awaits analysis and eventually will place parenthood on a better plane, with immense benefit to the child and more satisfaction to the parents. The instinctive love for their children is still one of the strongest motives in the parents of our race.

Our pioneers strove to leave this country a better place for their children. Our parents have in turn carried on the torch of life and fought for better conditions. It is our turn to make sacrifices for the welfare of those that follow us. For the first time accurate knowledge is being placed at our service; for the first time we are fully realizing our power in creating physical and mental health; for the first time in our history the community is developing health consciousness. If we believe that soundness of mind is the master key to human progress, we may hope for results in mental health which are at present beyond our wildest dreams.

Addendum.

In the accompanying table are estimates of special types of children (and adults) in Australia, chiefly based on New South Wales figures (two-fifths of Australia) for 1932. Population of Australia, six and a half million; number at school age, about one million.

Group.	School Population.		Adult Population.	
	Incidence.	Total.	Incidence.	Total.
Mental deficiency ..	(1.0%)	10,000	(0.4%)	26,000
Epilepsy ..	2.0%	2,000		13,000
Stammer ..	2.5%	12,500*		?
Blind ..		35		175
Deaf and dumb ..		100		450
Myope ..	5.0%	5,000		(15,000)?
Hard of hearing ..		(3,000)?		(5,000)?
Colour blind ..		30,000*		200,000*
		3,000*		20,000*
Cripples ..	0.5%	3,000		(6,000)?
Delinquent ..		3,000*		
		300*		
Cardiac (rheumatic) ..	0.5%	5,000		20,000
Malnutrition ..	1.0%	10,000		
Trachoma ..		(500)?		
Truants (marked) ..		400		
Theatre children ..		(2,000)?		
Tuberculous ..		1,000		
Veneral disease (active) ..				
State institutions and boarded out (not to mother) ..		15,000		
Orphan asylums ..		10,000		
Special school types ..		38,000		
		about 4%		

* Boys; * Girls; * Men; * Women.

Figures in Regard to Certain Social Problems in New South Wales.

Of all who die, 1 in every 36 dies in a mental hospital; over the age of forty, not less than 1 in 20 (cost of mental hospitals £600,000 each year). Over 4% pass through prison (10,885) (cost £200,000).

Criminal abortion causes over one in seven of all maternal deaths. Deaths from abortion of all types, 30%. Illegitimate children, 4% of births. Drunkards numbered 21,500 (9%). Drinks cost £14,500,000. Divorces numbered 400. Children of divorced parents number 1,400 yearly. One-child families represent 8,000 children (21,000 in Australia).

TUMOUR OF THE BRAIN AS MET WITH IN GENERAL PRACTICE.¹

By LEONARD B. COX, M.D. (Melbourne), M.R.C.P. (Edinburgh),

Neurologist, Alfred Hospital, Melbourne; Lecturer in Neuro-Pathology, University of Melbourne.

(From the Neurological Clinic of the Alfred Hospital, Melbourne, and the Baker Institute of Medical Research.)

If any excuses should be needed for introducing this subject to you this evening, I would plead but two: the frequency of tumour of the brain and the recent advances made in its treatment.

Brain tumour is not a rare disease; this belief should, I feel, be dispelled for ever. That it is frequently unrecognized is very true, for it stalks in many disguises, some of which I will attempt to draw for you as the evening proceeds. Thus it has been calculated that from 1% to 2% of the general population die with tumour of the brain. Collier, commenting upon its incidence, remarks that of all organs of the body the uterus alone is more frequently the site of tumour.

Statistics drawn from the National Hospital, Queen's Square, for the year 1924 again reflect its frequent incidence. Of 1,307 patients treated, 163 suffered from intracranial tumour, 132 from disseminated sclerosis, 113 from nervous syphilis. The conclusions reached were that idiopathic epilepsy and vascular disease of the brain were alone of more frequent occurrence.

I suppose that few of us would entertain the suggestion that intracranial tumour is more common than clinical nervous syphilis, yet even in this country I feel that it is almost as frequently encountered.

Of late years the surgical treatment of tumour of the brain has advanced to a remarkable degree. Yet we must be careful not to exaggerate the degree of this advance nor to expect too much. Unless a tumour is obviously of a favourable type, the odds are still against the surgeon. Brain tumour, especially if occurring in the cerebral hemispheres, is usually a malignant condition. There remains, however, a considerable residue, even in this situation, which deserves a serious attempt at removal.

Even in this unfavourable site, if we include tumours of the meninges and of the pituitary gland, I have calculated that at least one in three is of a type favourable for removal. Moreover, where removal cannot be attempted, a substantial and sometimes remarkably prolonged relief of symptoms may result from decompression.

Beneath the tentorium, in the cerebellum and in the cerebello-pontine angle more favourable types are encountered. Amongst the subtentorial tumours about one in two is of a favourable type, even including those unfavourably placed in the brain stem. In my own series of 178 histologically confirmed tumours, excluding the cerebellar metastases of multiple secondary carcinoma, thirty-six were situated in the cerebellum and thirteen in the cerebello-pontine angle.

Neuro-surgery is a special study. Although a general surgeon may relieve the symptoms produced by the increase of intracranial pressure, he will usually find himself in serious difficulties should he attempt the extirpation of one of these growths without special organization, equipment and experience. Even so, it is a tedious and difficult branch of surgery, which requires not only extreme patience and mental capacity, but more than an average degree of physical fitness.

The Diagnosis of Intracranial Tumours.

The diagnosis of intracranial tumours requires that the frequency of their occurrence should always be kept before the mind. We have been made aware of the frequency of syphilis, but not emphatically tumour. This being so, every practitioner, on observing a patient with organic disease of the brain, should not be content to ask himself: "Is this syphilis?" but also: "Can this be tumour?" If he suspects that it may be the latter, it is advisable to seek speedy confirmation of his diagnosis.

Then follow the problems of its localization and of the likelihood of the tumour being of a type favourable for removal. Both of these problems must be resolved by one who knows the habits and haunts of these formidable growths. Localization is not always an easy problem and will not be dealt with here. It requires special knowledge not possessed by everyone. By clinical diagnosis, together with ventriculography, about 80% or more of intracranial tumours may be localized fairly accurately. The ways and means of this localization do not concern us this evening.

Of pathology I will say little. The pathological histology is difficult and may require special methods of staining for its elucidation. The gross pathology of brain tumour is of some importance and will be mentioned briefly during the course of the evening.

Tumour Types.

We may in the main divide intracranial tumours into five big groups.

1. *The Gliomata.* The gliomata are in the main derived from the neuroglia, the special connective

¹Read at a meeting of the Geelong Subdivision of the Victorian Branch of the British Medical Association on October 2, 1934.

tissue of the brain. They are the commonest of all brain tumours and are of varying malignancy. They form 43% of Cushing's large series of tumours and about 53% of my own.

2. *The Fibroblastomata.* Of the fibroblastomata the tumours of the meninges (meningioma, endotheliomata) form about 12% of all cerebral tumours, while the auditory nerve tumours form about 7%. These do not invade brain and are extremely favourable types for removal.

3. *The Pituitary Tumours.* The pituitary tumours form from 17% to 18% of Cushing's series. My own most recent figures are much less than this, pituitary tumours forming only about 8% of all intracranial tumours.

4. *Secondary Carcinomata.* Secondary carcinoma form 4% of Cushing's series and 14% of my own.

5. *Miscellaneous Tumours.* Miscellaneous tumours include tuberculomata, gummata, hydatid cysts *et cetera*.

Secondary Carcinoma.

I should particularly like to draw your attention to the number of so-called primary brain tumours occurring in this country which prove to be secondary carcinoma. It is amazing how often the presence of a primary growth may be masked either by the occurrence of the symptoms due to the cerebral metastases or by its insignificant size and lack of symptoms and signs. Thus a primary carcinoma may be small and of relatively slow growth, while its metastases may be in general much larger and of more rapid evolution.

Primary carcinoma of the lung is notorious in this respect; in several patients in this series the primary growth has been found in this situation. However, breast, prostate, ovary, kidney, thyroid, alimentary tract, skin and naso-pharynx were shown to have been responsible in certain cases.

The question may arise as to whether one should suggest operation on a patient with a brain tumour suspected of being secondary carcinoma. In certain cases I believe it is advisable to explore, for the following reasons:

1. A decompression may relieve the suffering engendered by the increased intracranial pressure.

2. It is not uncommon to find a non-carcinomatous growth when a carcinoma metastasis has been suspected. Thus in two patients of this series, whose brain tumours were thought to be carcinomatous, gliomatous growths were found at autopsy.

3. Carcinoma of the brain is not uncommonly a single growth. If conveniently situated, as they often are, beneath the cortex, their enucleation may be very simple. Unfortunately the relief is usually only a matter of a few months. One remarkable example of non-recurrence has, however, been reported by Oldberg.

A woman of fifty-two suffered from a brain metastasis, the size of a hen's egg, following carcinoma of the breast. It was removed at operation and after two years the

patient died with general body metastases. The brain was removed and carefully sectioned. There was no sign of recurrence, a depressed scar marking the site of the removal.

Gummata, Tuberculomata and Hydatid Cysts.

Having stressed the frequency of secondary carcinoma, a frequency which, if we include only patients of the carcinoma age, is much greater than those figures indicate, I should like to draw your attention to the great rarity of the large gumma of the brain and the infrequency of large brain tuberculomata and of hydatid cysts.

Gumma of the brain, apart from ordinary meningo-vascular syphilis, is almost best forgotten, for one may go a lifetime without encountering one. Moreover, as Horsley pointed out some years ago, the large intracranial gumma is irresponsive to antisiphilitic treatment and is best treated surgically; after these measures antisiphilitic treatment may prove efficacious. Therefore, with signs of brain tumour associated with a simple positive Wassermann reaction, one should operate if there is evidence of increasing intracranial pressure. I do not, however, mean to imply that cerebro-spinal meningo-vascular syphilis should be so treated. The examination of the cerebro-spinal fluid will usually serve to distinguish this condition from tumour of the brain. It is the patient with signs of brain tumour and little else but a positive Wassermann reaction in blood or cerebro-spinal fluid to whom I am referring.

The large brain tuberculoma is again of infrequent occurrence, particularly in adults; it has been met with on but one occasion in this series. It should be diagnosed with caution, even in a tuberculous patient. It is interesting to compare the present-day incidence with that of a few years ago. Gowers, writing in 1893, stated that tuberculomata formed more than 50% of all brain tumours. The decline in its incidence is truly remarkable, although tuberculous meningitis is always with us, and in its less rapidly advancing form may suggest tumour of the brain.

Hydatid cyst of the brain is also quite uncommon, despite the comparative frequency of hydatid infestation in Australia.

Types of Onset and Course of Brain Tumour.

It is customary to teach that the type of onset and speed of progress of a brain disorder are of great value in diagnosis. Thus a dramatic onset is thought to signify a vascular condition, as a hæmorrhage, an embolism or a clot; a rapidly advancing array of signs and symptoms may denote an inflammatory condition, as an abscess, a meningitis or an encephalitis; a slower evolution may suggest an intracranial neoplasm; while a still slower anamnesis extending over many years betokens some chronic degenerative or inflammatory condition.

A steadily expanding tumour may be expected to produce a slow evolution of signs and symptoms, with perhaps occasional exacerbations due to

hemorrhage or œdema. With a spontaneous remission of months or years in the course of a cerebral illness, whatever else was present in the brain, it can hardly be tumour. If, as was frequently the case, the patient is undergoing antisyphilitic treatment during one of these remissions, syphilis is diagnosed.

Unfortunately all of these tenets are too frequently overthrown to be of universal application. There is no one feature which would contraindicate brain tumour. I can illustrate this point by reference to a remarkable case recently reported by Hausman and Stevenson.

A boy, aged about six years, developed attacks of headache, vomiting and unsteadiness of gait. He was seen by an eminent American neurologist, Dr. Allan Starr, in 1896, and was reported in *The Medical Record* as suffering from cerebellar tumour. He was given potassium iodide in doses of 15.0 grammes (250 grains) *per diem*, and inunctions of mercury. His improvement was remarkable and he remained well until 1920, leading an active and useful life. Needless to say, he was now thought to have had some form of syphilis of the brain. At the age of forty-one he married and begot two healthy children. Several years afterwards he developed headache. Iodide was given again, and although not at first efficacious, ultimately seemed to be, for once more he was restored to health. He remained in good health until 1930, when again headache, vomiting and a staggering gait reappeared. On this occasion antisyphilitic treatment proved of no avail; his symptoms progressed; mental deterioration became evident, and he died suddenly in 1932, forty-five years after the first onset of his symptoms. At autopsy a gliomatous nodule, associated with a large cyst, was found in the cerebellum.

This is indeed a remarkable and instructive case.

Cerebellar Tumours.

I should now like to draw your attention to certain clinical features which may be associated with tumour of the cerebellum.

1. Those occurring in childhood may present great difficulty to the diagnostician. It is easy to bring to one's mind the possibility of brain tumour when one is confronted with a subject complaining of headache associated with vomiting attacks, perhaps with failing vision and some unsteadiness of gait. The thought of this condition may not so readily arise when a patient is encountered suffering from morning vomiting or from a "wry neck".

Vomiting associated with cerebellar tumour may be extremely misleading. Headache may be little complained of or may be entirely absent. This vomiting in all probability is due to compression of the medulla and a disturbance of the centres contained therein. In these circumstances it may not be a sign of increasing intracranial pressure, but may be of some value as a localizing sign. The vomiting may be confusing in other ways; it may be relieved by purgation, by diet or may remit of itself. The condition may therefore quite feasibly be considered as a gastritis or, if persistent, and ketone bodies appear in the urine, be thought to be a "primary acidosis".

Every child with recurrent vomiting must be regarded with suspicion. It is important to diagnose

cerebellar tumour at as early a stage as possible, for sudden death is of frequent occurrence and is usually unexpected. Sudden movement, as vomiting, or straining at stool may produce a medullary crisis with respiratory failure and death.

Even in adults a similar problem may arise and a gastric condition be diagnosed.

A woman of fifty stated that she had been vomiting after meals for three months. She was flatulent, but suffered no pain in the abdomen. The radiologist reported that his findings suggested a small pre-pyloric ulcer. A posterior gastro-enterostomy was performed; the vomiting continued. The general condition became worse and the patient's abdomen was reopened. The gastro-enterostomy wound, however, seemed to be functioning perfectly. The vomiting continued and the patient died. At autopsy a large mid-line cerebellar cyst was found, with a small nodule of tumour in its wall.

The great tragedy of this patient was that she could have been permanently cured by operation. Such cysts are common and among the most favourable of all tumours. If the tumour nodule can be satisfactorily removed, an absolute cure may eventuate, for the cyst wall is usually non-neoplastic.

2. Here is another tragedy illustrating how important it is to attend to this type of patient as early as possible.

A man, aged forty-five, was sent down from the country as a tumour suspect. Unfortunately, after admission to hospital, for some reason his full investigation was delayed, as he did not seem to the resident physician to be seriously ill. He was found dead in bed one morning. At autopsy a simple nodule associated with a large cyst was found just under the cerebellar cortex—quite the easiest surgical brain tumour problem that had ever presented itself to us.

3. A cerebellar tumour not uncommonly produces a stiffness of the neck, together with a positive Kernig's sign, thus suggesting some form of meningitis. At times the diagnosis from meningitis may be quite difficult, particularly if the cells are found to be increased in the cerebro-spinal fluid. This is not common, but occurs in from 20% to 30% of all intracranial tumours. The highest cell count that I have personally seen is 960 to the cubic millimetre.

A simple neck stiffness is by no means the only sign that may occur. A deviation of the head to one side, often with a rotation of the chin, is by no means uncommon with cerebellar tumours or with those of the cerebello-pontine angle. At times this deviation may occur years prior to the onset of the cardinal signs of brain tumour. Here is an unusual case.

A man of forty-one presented himself at the out-patients' department with the grossest signs of a left-sided extra-cerebellar lesion. He had been unsteady for several years and could not convey his food to his mouth with his left hand. He was deaf in the left ear and had suffered severe neuralgic pains in the left side of his face. He had no papilledema. At operation Dr. H. C. Trumble removed a large mass of cholesteatoma from the left cerebello-pontine angle, with a remarkable relief of symptoms.

A cholesteatoma is a congenital tumour of a similar nature to a dermoid. This man had suffered from a "wry neck" since early childhood.

Here is another case.

A girl of fourteen showed the gross signs of a cerebellar tumour. She suffered from a very definite lateral deviation of her head, a deviation which could be observed in a photograph taken at the age of six years, long before the usual signs had appeared. At operation by Dr. Trumble a large cystic astrocytoma was discovered and a mass of tumour was stripped from the wall, with substantial relief of symptoms.

4. Unfortunately cerebellar tumour may exist without the presence of its classical signs.

A man, aged thirty-eight, returned to Australia from active service in 1920. On resuming work he found that his legs were weak and that he was apt to collapse occasionally. Later some headache developed. No papilloedema was observed and the significance of a fine nystagmus was overlooked. As he had been twice buried in France, his disability was considered as due to shell shock, although organic disease was suspected. Then, without warning, he became cyanotic and died. His brain showed a mid-line cerebellar cyst with a large nodule of tumour in its wall.

5. I do not wish to deal with neurological phenomena tonight, but nystagmus is a sign which may be elicited by all. Although not strictly true, for practical purposes every patient with a brain tumour showing a true nystagmus may be considered to have a lesion in the posterior fossa. Nevertheless true nystagmus may result from the pressure on the cerebellum of an occipital tumour or from some other cause. Unfortunately many patients with cerebellar tumour show little or no nystagmus.

Some time ago we were puzzled by a boy of twelve who had developed headache, vomiting and papilloedema. Not one cerebellar sign could be elicited, the skiagram showing a "beaten silver" appearance of the skull. As the cerebellum is the commonest seat of brain tumour in childhood, and for certain other reasons, it was decided to explore the posterior fossa. The day before operation, for the first time, a fine nystagmus was noted. At operation a large fibrillary astrocytoma was removed by Dr. H. C. Colville. Now, after two years, the boy is well.

Even if total removal cannot be completed in such cases as this, this type of tumour is of such slow growth that it may take many years to recur, when, of course, a further removal may be attempted.

6. Cerebellar signs and symptoms may disappear in a remarkable way with rest.

A boy, aged sixteen years, was admitted to hospital from the out-patient department with the grossest nystagmus and other cerebellar signs. Next day the resident medical officer remarked that he could not understand why the boy had been admitted, as he could find nothing wrong with him. I examined him and could not find one definite neurological sign. However, operation followed, a large cerebellar cyst was found, from the wall of which Dr. Trumble removed a large nodule of tumour. Unfortunately the boy, who had been extremely well after operation, later developed a fistula exuding cerebro-spinal fluid, and died with meningitis.

7. All cerebellar tumours occurring in childhood are not of this innocent type. One, the so-called medulloblastoma (the old-time gliosarcoma) may develop from the roof plate of the fourth ventricle and is usually a rapidly growing malignant tumour. It is probably best left alone surgically and treated with deep X ray therapy, for it is extremely radio-

sensitive, as are many of these small round-celled tumours. However, despite these measures, death invariably follows after a certain period.

Brain Tumours in which the Onset of Symptoms is Sudden.

I should now like to speak of patients with intracranial tumours in whom a sudden onset of symptoms may suggest a primary acute vascular disturbance of the brain.

1. It has been noted that sudden death not uncommonly occurs in patients suffering from cerebellar tumour. For some queer reason gliomatous cysts in any situation, after remaining latent for years, may suddenly occasion a startling incidence of symptoms.

A man of forty-nine years was found unconscious in bed one morning. He was thought to have had a stroke and was admitted to the Alfred Hospital. However, his systolic blood pressure was only 110 millimetres of mercury and at a later date papilloedema was observed. A left temporal decompression was done and the brain was needled without result. The patient became progressively more demented and died at a later date. At autopsy a large cyst associated with a tumour nodule was found in the left frontal lobe. It was well delimited, of an innocent type, and extremely favourable for removal.

Possibly some sudden disturbance of circulation or brain oedema may occur and precipitate an acute onset in such cases.

2. Sudden vascular lesions are not uncommon in association with intracranial tumour. A thrombosis may occasionally occur, and several examples of the occlusion of the middle cerebral artery resulting from the presence of brain tumour have been reported.

Hæmorrhage is more frequently encountered. One of the commonest and most hopeless of all brain tumours is the *glioblastoma multiforme*, occurring in the cerebral hemispheres of adults. It is of rapid growth and usually causes death within one year of the onset of symptoms. As a surgical proposition it is almost hopeless, and when encountered at operation is probably best left alone. It is a vascular growth and is prone to hæmorrhages. If it should originate in a silent area of the brain, a sudden hæmorrhage within its substance may precipitate a chain of symptoms.

Thus a man of forty-seven years was admitted in a comatose condition to the Alfred Hospital. His wife said that he had experienced some queer feelings over the left side of his body for about one year and had occasionally complained of headache during the previous month. He died soon after admission. At autopsy a large glioblastoma was found infiltrating the right temporal lobe. Recent hæmorrhages were present within its substance. The paræsthesias had apparently resulted from disturbances of the neighbouring basal ganglia.

Sometimes a hæmorrhage may occur beyond the tumour edge, or even in some unrelated part of the brain.

A man, aged forty-nine years, was referred from the country with a diagnosis of a "stroke". One day some months previously a weakness of the left side of his body rapidly developed, accompanied by twitching. He improved steadily for three months, but for one month before I saw

him he had begun to go down hill and had become quiet and stupid. He showed the complete indifference displayed by certain patients suffering from frontal lobe tumour, together with a weakness on the right side of his body and an early left optic atrophy. He was admitted to hospital, but died before operation. At autopsy a favourable type of glioma was found involving the lower surface of the left frontal lobe. A large hæmorrhage was found in its vicinity.

The hæmorrhage may be in quite a different area of brain to the tumour.

I examined a man who was admitted in a semi-comatose state to hospital. It was possible with some difficulty to make a diagnosis of tumour of the right parietal lobe. The patient died a few hours later, quite suddenly. At autopsy it was found that the lesion, which had been localized, was a hæmorrhage. The tumour, although on the same side of the brain, was situated in the occipital lobe.

On another occasion I was given for examination the brain of a man aged sixty years. He had been thought to be suffering from brain tumour, but had died suddenly. One tumour was found in the left lateral ventricle, another in the cerebellum, but death had resulted from a hæmorrhage of the right frontal lobe.

I am citing these cases to illustrate how one must not accept too lightly a diagnosis of a primary brain hæmorrhage or thrombosis. Such patients should be carefully followed up and any atypical occurrence noted. Moreover, a careful examination should be made of any past occurrence which might suggest tumour. In particular the fundi should be watched for the occurrence of papillædema, which hardly ever occurs in a primary brain hæmorrhage.

Perhaps the most difficult of all conditions to distinguish from brain tumour is a slowly progressive vascular disease of the brain. This, if it be productive of signs persistently localized to one side of the brain, may cause one an immense amount of thought. If the signs are bilateral, the problem may not be so difficult. The skiagram may be useful; thus it may show the pineal shadow to be shifted to one side, or calcification within a tumour may be visible. An osseous spur or some local affection of the cranial bones may also give some indication of the presence of a tumour. However, usually no simple indications of this sort are present, and the physician may be hard put to it to say whether a brain tumour exists in a patient suffering from vascular disease. If cardio-vascular disease is fairly well advanced, it is probably well, as a rule, not to explore, for these patients do not tolerate operation well. If, however, the cardio-vascular disease does not seem sufficient to contraindicate operation, ventriculography may be used as a means of diagnosis. This procedure, as usually practised, may, however, be hazardous and disturbing, and should not be too lightly undertaken.

Brain Tumour Suggesting Encephalitis.

I now come to a further group, the patients in whom brain tumour mimics encephalitis. Many practitioners fall readily into this diagnosis when they are confronted with some unusual cerebral symptoms in which the cardinal signs of brain

tumour are absent and where syphilitic or arterial disease of the brain seems unlikely.

It should be realized that "encephalitis", except in epidemic time, is a rare disease in Australia. During the last three years, although I have seen well over one hundred cases of brain tumour at operation or at autopsy, I have not seen one case of *encephalitis lethargica* at autopsy. In the wards and in private practice I have seen numerous patients showing the sequelæ of this disease, but only one acute case in which the diagnosis was unquestionable. Previous to this period they seemed much more frequent. I have, however, seen several patients come to autopsy in whom this condition was diagnosed. They have invariably been shown to be suffering from tumour of the brain. Here are two illustrative cases.

A married woman of thirty-eight was admitted to the Alfred Hospital in a lethargic condition. She was somnolent and could hardly be roused, while her spinal fluid showed a marked increase in cells. At autopsy a tumour of the pineal gland was found.

A man of forty-two was seen by a consultant and diagnosed as suffering from encephalitis. He was admitted in a comatose condition to the Alfred Hospital, but could be roused with some difficulty. This diagnosis was accepted for a while, until somebody noticed hæmorrhages in the retinae. At this stage, when he was seen, he was stupid and it was difficult to make a proper neurological examination, but certain signs were elicited which suggested a lesion of the right side of the brain. Owing to his unsatisfactory mental state it was thought wise to confirm the position by ventriculography. Here tragedy stepped in; a large cyst was tapped on the right side of the brain and was thought to be the ventricle. It was accordingly filled with air. A few hours later the patient suddenly stopped breathing. An intratracheal tube was introduced and the patient was oxygenated until the cyst could be opened. This was done by Dr. H. C. Trumble and the contents were evacuated, but respiration could not be reestablished and death resulted. At autopsy a slowly growing glioma (an ependymoma) was found, a collapsed cyst lying adjacent to it.

This was a great calamity, for it is uncommon to find such a favourable tumour in the cerebrum.

I would therefore suggest that the diagnosis of encephalitis should not be made lightly.

Tumours Associated with Mental Changes.

The patient who develops some change in disposition may be a cause of anxiety. It is quite uncommon to find brain tumour in an individual who suffers from an anxiety state or neurasthenia, but occasionally this may occur.

Thus a young man of twenty-six complained of insomnia, an inability to concentrate and some headaches over a period of two months. His father had died of a cerebral tumour one year before. The patient had suffered from a nervous breakdown about seven months previously and had been sent away for a holiday to Sydney by a prominent psychiatrist. He was very apprehensive of losing his reason, as are many neurasthenics. The diagnosis of neurasthenia was rudely interrupted by the onset of vomiting, double vision and papillædema. He died some time afterwards, and later was shown to have a very malignant tumour of the right frontal lobe.

In these days of stress and worry one should not allow a history of domestic and financial difficulties

to deflect one's mind too much from consideration of the organic.

Thus a man of forty-four complained that he was nervous, unable to think properly, and that his memory was bad. He had had a good deal of worry and had first broken down about five months before, after a severe operation which had been performed upon his wife. A psychiatrist had elicited a history of financial and domestic worries of a severe grade over a long period, and treated him with hypnosis. The patient seemed to be a stupid man, unable to obey simple commands. When, however, he was examined, this apparent confusion and stupidity resolved itself into an aphasia for the meaning of names; in addition it was found that he could not tell what simple objects were when held in his right hand. Although he could not tell the name of the same objects in the left, he could indicate when the right name was mentioned to him. When it was suggested to his physician that he might have a tumour of the left post-cerebral region, he remarked: "But, great Scott, man, he's had all the worry in the world. Why, his wife has had two children by another man!" A large malignant parietal lobe tumour was found at autopsy.

Occasionally individuals may be certified as insane without intracranial tumour being suspected. However, tumour is uncommon in asylum practice.

A slowly growing meningeal tumour may occasionally cause difficulty. It is easy to suspect tumour with a relatively rapid onset of mental symptoms; it is not always so easy where there is a long history over some years.

A woman of fifty-one was admitted to an asylum in 1922 suffering from manic-depressive insanity. Dementia slowly progressed, and in 1932 she died. At autopsy a large meningioma of the left frontal lobe was found.

This is, of course, an extremely favourable type of tumour, and in this particular case might have been identified, as a large bony exostosis was reported as being present beneath it. These meningiomata are extremely slowly growing tumours. In fact, so slow may be their growth that there is hardly any length of history which can negative a diagnosis of tumour of the brain.

Tumours of the frontal lobes are frequently associated with mental changes, although these may be found in relation to tumours of other areas. Thus one patient dying in a mental hospital was found to have a carcinoma metastasis in one occipital lobe.

One very common type of disturbance associated with frontal lobe tumour is the occurrence of a colossal indifference. The patient may be contented and conscious, but remain undisturbed by the sorrows or joys of his family. He may display no emotion at the news of the death of his wife or child, and if told that he is about to have a serious operation will remain quite uninterested and detached. On other occasions such a patient may show more a mild hypomaniacal state.

Thus a patient at present in the Alfred Hospital had become progressively more difficult to get on with for some years, so that his relatives and friends were all heartily tired of him. When I first saw him, he was quick and alert, but excessively argumentative and interfering. He joined in every conversation, became easily angered and, for that matter, just as easily amused.

A glioma (an astrocytoma) of a relatively benign nature was removed from one frontal pole by Dr. H. C. Trumble with as yet little effect upon his disposition.

On other occasions a complete confusion may result.

A man of fifty-two was admitted to hospital in a state of profound mental confusion. Although not aphasic, he had no idea of time, space or events. He would at one time greet one as an old friend, at others as a malignant enemy, and remained entirely confused on all personal matters. On the last occasion that I interviewed him, he had but one remark to any inquiry of any sort: "Oh, yes, a barrel of oil." His tumour was a large one, involving the *corpus callosum* in its anterior portion.

With tumours of this situation the grossest mental confusion is likely to occur.

Of late years it has been recognized that various psychical phenomena may be associated with tumours involving the third ventricle. Excessive sleep is by no means an uncommon manifestation and may be associated with tumours involving the floor of this ventricle or the mesencephalon. Here is the account of such a case.

A woman of forty-nine developed the signs of a mid-brain tumour, slept almost continuously and gained considerable weight. A tumour was found involving the posterior part of the third ventricle as well as the mesencephalon.

The same symptoms may result from a slowly evolving internal hydrocephalus.

A boy of eleven was admitted to hospital with the story that for five years his sight had been failing. Headaches had preceded the loss of vision. He was a quiet, obese little lad, with hypoplastic genital organs, who became progressively more drowsy and ultimately died. At autopsy a mid-line cerebellar tumour was found associated with the grossest hydrocephalus. His obesity and hypersomnia were due to the distension of the third ventricle.

Hypersomnia, in the absence of an internal hydrocephalus, is strongly suggestive of a tumour involving the third ventricle, particularly in its posterior portion.

Migraine.

We are often warned to be constantly on our guard against a diagnosis of "migraine", as a brain tumour on occasion lies behind this syndrome. Certainly headache and vomiting are a common manifestation of brain tumour, although it is unusual to find a neoplasm as the basis of a long established migraine. Here, however, is an example of what might well have been regarded as migraine occurring in a patient who was ultimately found to have a meningioma of both occipital lobes.

A man of thirty-one had suffered for at least half his life from attacks which were considered to be migraine; he would have visual phenomena in one-half of his fields, followed after some minutes by headache. About two years before death a permanent defect appeared in the visual fields and it was recognized by his physician that he was suffering from brain tumour. What was considered to be the entire tumour was removed abroad, apparently with perfect relief. Unfortunately one year later the symptoms recurred in Australia, and cabled advice was against any further surgical attempts. He died and his brain was given me to examine. The real explanation of

the recurrence of his symptoms was the presence of an unrecognized mass of growth on the opposite side of the falx to that from which the original mass had been removed.

On occasions one may be very worried as to whether there is not some organic basis behind a so-called migraine. Intracranial tumour must therefore always be borne in mind, particularly if there is any suggestion of some residual organic defect, as a slight facial paresis or a defect in the visual fields, remaining after the attack. At the same time it must be appreciated that migraine is an extremely common disease and only rarely associated with cerebral neoplasm.

Pituitary Tumours.

Pituitary tumours, as they enlarge, may be associated with hypersomnia and even with mental symptoms. As a rule tumours of the pituitary gland are fairly easy to recognize. The essential cells of this gland may be divided into three groups: a group of cells of which the cytoplasm contains few or no granules (chromophobe cells), a group containing granules staining readily with acid dyes (acidophile cells), and a group with granules staining with basic dyes (basophile cells).

Adenomata occur in which one or other of these cells predominates. The commonest type is the chromophobe adenoma, which is apt to produce a picture of hypopituitarism, or rather, what is so described, for it has not been definitely settled whether some of these signs may not be due to involvement of the neighbouring hypothalamus. The individual may lose his or her sexual characteristics. The male may lose his *libido*, the female notice a cessation of menses. The genitalia are apt to atrophy, the hair to become scantier, the skin softer, and at times a masculine appearance may become more feminine in type. Obesity may occur, and the new fat may have a somewhat feminine distribution in the male. When well developed, the resultant condition is known as Fröhlich's syndrome. *Diabetes insipidus* and excessive sleepiness may be added, possibly owing to involvement of the neighbouring hypothalamus.

These signs and symptoms occurring in childhood are not so commonly associated with a pituitary tumour, which is uncommon at this period of life. Should a tumour be present, it is much more likely to be a suprapituitary one which has developed from Rathke's pouch. Here is such a case.

A girl of fourteen was admitted to hospital with headache and papilloedema. She was a plump child, with very little development of breasts or pubic hair; she had never menstruated. The whole frame was immature, the pelvis small, and the mental attitude childish for her years, despite the fact that she was very engaging and observant. She was suffering from a gross *diabetes insipidus* and would drink from her water bottle or from the flower vases if she were not watched. A large suprasellar cyst was drained at operation by Dr. Trumble. She improved amazingly, despite the fact that no attempt was made to remove the main tumour mass, a procedure which has nearly 100% fatality rate when the tumour is in this situation. Later her symptoms recurred and she died rather suddenly.

Acromegaly, a condition which is too well known to merit description here, is associated with a chromophile adenoma of the acidophile type. Gigantism may result if the onset of the condition has occurred early in life.

Of late a tumour of the basophile cells has been described by Cushing. In this condition there seems to be a peculiar distribution of painful fat about the thighs and about the neck, often associated with marked cutaneous striae. Hypertrichosis may occur, and another very interesting feature, a marked elevation of the blood pressure. It is not perhaps possible to say as yet for certain whether these signs are really the result of an excessive secretion of these cells. They may result in part from an excessive activity of other ductless glands, for it is not uncommon to find that when an adenoma occurs in one gland, hypertrophy or adenomata are present in others.

Epilepsy.

Epilepsy, particularly when it begins late in life, must always be investigated carefully. It is not uncommon for a late epilepsy to result from the presence of tumour of the brain. There are, however, other causes for late epilepsy, among which may be mentioned vascular disease and cerebral syphilis. I think vascular disease of the brain has been a commoner cause in my experience than brain tumour. On other occasions no very definite cause can be found. However, epileptiform seizures are frequent in the course of intracranial tumour. As a first symptom they are far from uncommon, occurring in about 10% of the patients in my series.

Conclusion.

I have attempted tonight to present to you in a general way some of the syndromes which may suggest a diagnosis of tumour of the brain. Most individuals in whom this condition may be suspected will prove not to have this serious malady. As, however, early diagnosis is so important, I would beg of you always to keep this disease in mind. There is nothing more disheartening than to be confronted with a blind, a demented, or a comatose patient and to be asked to localize the position of the tumour. One may have to resort to ventriculography, which may be a disturbing and hazardous operation or, even if successfully borne, may not give the desired information.

I hope that I have said sufficient to illustrate that neither an acute onset nor the presence of periods of intermission of symptoms for months or years, nor a long duration of a condition, nor an apparent response to antisiphilic treatment should deflect one's mind from the consideration of brain tumour.

If I have been able to convince you of the comparative frequency and protean manifestations of this condition, I feel that I have not altogether failed.

WHOOPING COUGH, WITH PARTICULAR REFERENCE TO PERTUSSIS VACCINE.

By IVAN BLAUBAUM, M.B., Ch.B. (Otago).

Clinical Assistant to Physician for Diseases of Children, Alfred Hospital, Melbourne.

THE purpose of this article is to endeavour to throw some light on our knowledge of pertussis and to assess the value of vaccine in its treatment. I have based my views on the study of 148 cases of the disease seen during the last eight months; 122 of the cases were observed in public hospital and 26 in private practice.

Description.

Whooping cough is a specific infectious disease which is generally regarded as being caused by the *Bacillus pertussis*. The organism is sometimes found in the upper respiratory tracts, more often below the larynx than above it (Rahroh). The disease is characterized by the well known paroxysmal cough, which in most cases ends in a long-drawn inspiratory "crow", this being often accompanied by vomiting.

Whooping cough is not a seasonal disease. It may manifest itself all the year round, especially in cities. It appears, however, to be more severe in winter, although it may occur in great severity in the summer. The older the individual, the less the susceptibility. The incubation period is doubtful, being probably from seven to fourteen days.

Incidence.

Most authorities state that over half the cases occur in the first two years of life. My own series shows: under one year, 18; one to two years, 38; two to four years, 40; four to eight years, 30; over eight years, 11. This makes a total of 137, of which only 56, or 40.14%, are under two years. It may be that many mothers will not bring their young babies to hospital, as there seems to be still in their minds an unjustified fear of the effect of vaccine upon children of that age.

Infective Period.

The infective period seems to be from the very beginning of the catarrhal stage, though the disease remains infective practically till the spasm has subsided. I am of the opinion that the so-called "relapse" is not a true pertussis. Very often it is due to a return of slight bronchitis, the mucous membrane being sensitive and producing the spasm to which the child has habituated itself. Those cases of "return" of the whoop which are sometimes reported about the same time the following year, are to be explained, I think, by the same sensitivity of the mucous membrane under the same atmospheric conditions, and are due to some allergic

condition present. I have been informed that the injection of the pertussis vaccine into a normal child, who suffered a year previously from whooping cough, has been known to bring on the spasmodic cough.

Symptoms.

Symptoms are usually divided into three stages: (i) the catarrhal, (ii) the spasmodic, and (iii) the stage of decline. I do not wish to bore my readers with these well known signs, but just to mention a few conditions which occur and which will have some bearing on the value or otherwise of vaccine treatment.

The catarrhal stage needs no description and does not concern us. The spasmodic stage does concern us in that it is my endeavour to show the effect of the vaccine on the number of spasms, the occurrence of hæmorrhage, the amount of vomiting, and the percentage of complications that occur, by comparison with the occurrence of these conditions in children who have not received injections. The number of severe paroxysms in twenty-four hours varies, according to the severity of the case, from six to forty (Holt). Holt also states that the average duration of the spasmodic stage is four weeks, extending in many cases up to three months or more. Rahroh gives the average as four to six weeks. Of hæmorrhages the most frequent is epistaxis; then follow conjunctival hæmorrhages and extravasation into the cellular tissues of the face, especially under the eyes, resembling the well known black eye. Vomiting occurs in nearly every case of moderate severity. It may be absent in the mild cases.

Complications.

The most severe complication is bronchopneumonia. Others less frequent are convulsions, summer diarrhoea, bronchitis *et cetera*. Very often bronchiectasis can be traced back to an attack of whooping cough. Albuminuria is not infrequent.

Prognosis.

Death is rare when the patient is over four years of age. Fully two-thirds of the deaths from whooping cough occur during the first twelve months of life.

Treatment.

General.

Fresh air is the most important factor in general treatment. The child should be kept out of doors as much as possible. The main reason why a child coughs more at night than during the day is because very often he is lying in an enclosed and vitiated atmosphere, thus giving a stimulus of impure air to the sensitive respiratory apparatus. Careful feeding is of great importance. The child should have small meals and more frequent ones. Never let the stomach be overloaded, as this leads to

almost certain vomiting. I have never seen any benefit result from inhalations or the "bronchitis" kettle. This applies also to garlic, gasworks and other absurdities.

Internal Medication.

Innumerable drugs have been used: potassium bromide, belladonna, phenazonum, chloral hydrate, "Luminal" *et cetera*. Short of narcotizing the child I have seen little good come from them. Certainly they do not shorten the duration of the disease.

Deep Therapy.

Some success has been claimed by those using this method.

Vaccine Treatment.

In this series I have been giving from 500 million to 5,000 million units of the pure pertussis vaccine, according to the child's age. In six cases I have given pertussis *plus* coryza vaccine. Eleven patients were given no vaccine and were regarded as controls. The average duration for the 137 cases was 5.3 weeks. The average duration for the controls was 9.3 weeks. The average duration at the various ages was: (i) under twelve months, 8.1 weeks; (ii) one to two years, 6.4 weeks; (iii) over two and under four years, 4.75 weeks; (iv) four to eight years, 3.6 weeks; (v) over eight years, 3.5 weeks.

In every case the duration was taken to mean until the spasm and vomiting stopped. In many of these cases vaccine was not given until the condition had been present for two or three weeks, such cases being much more resistant to the treatment than those in which vaccine had been given early. The average time when patients presented themselves for treatment was about six days after the whoop manifested itself. Some patients came during the catarrhal stage and treatment was instituted at once.

The more intelligent mothers were asked to note the number of spasms their children had at night while under treatment, and some 34 of them responded. The average number of spasms before treatment was as follows: before injection, 9 per night; after first injection, 8 per night; after second injection, 6 per night; after third injection, 3 per night. And thus up to the end of the third week, with subsequent recovery.

There were 14 cases which did not respond at all to vaccine treatment, the average duration of the disease being 11 weeks. Most of these were of the more severe types, in which the patients presented themselves late for treatment and were troubled with excessive vomiting. Many of the children who were treated early did not vomit at all—out of 56 of these early arrivals 31 did not vomit.

About 8% of the patients never whooped or vomited, and the disease in these cases cleared up rapidly, the spasm leaving in an average of a little over three weeks. Complications occurred in only

nine cases. Two children contracted broncho-pneumonia during the injection period, and one died. Injections were stopped at the first sign of fever. Five others suffered from epistaxis and two from conjunctival hæmorrhage. In the eleven control cases, four were not given injections because of complication already existing; there was one case of pneumonia, in which the patient died; three patients had conjunctival hæmorrhages, and one of these had also petechial hæmorrhage all over the face and neck. The other seven controls got through without complications.

No real prophylactic treatment was undertaken; but in 17 cases injections were given to children who were already probably in the incubation period. All of them developed whooping cough; but in 16 the disease ran a very mild course, only one case being severe. The average duration for the seventeen cases was 4.3 weeks.

Dosage.—For children under one year I started by giving 100 to 500 million vaccine units, working up to 1,500 or 2,000 million, according to the severity of the case. No untoward reaction was recorded. Older children were given 1,000 million units, working up to 3,000 million. All injections were at intervals of three to four days, and increment was 100 to 500 million in babies and 1,000 million in older children. In severe cases the older children were given up to 5,000 million units, five injections being required. Smaller doses were found to be less effective. The mixed vaccine of pertussis and coryza showed no advantage over the pure pertussis vaccine. All vaccine used was prepared by the Commonwealth Serum Laboratories.

Conclusions.

1. Pertussis vaccine is our best form of attack against whooping cough.
2. Early treatment is always more effective.
3. Large doses of vaccine are necessary.
4. Administration of vaccine shortens the duration of the disease.
5. If vaccine is given early, symptoms are always less severe.
6. Vaccine renders the advent of complications less probable.

Many points of interest in the description of this disease have been purposely omitted, this article being no attempt at a full description of whooping cough from the academic viewpoint. It is merely an attempt to assess the true value of pertussis vaccine in our fight against the disease.

Acknowledgement.

I am indebted to Dr. W. Spalding Laurie for his help and for allowing me to take charge of the cases presenting themselves at his clinic.

Reviews.

A MANUAL ON DIABETES.

Of all diabetic authorities still in active practice, Joslin, of Boston, a fifth edition of whose "Diabetic Manual" has recently appeared, has had by far the most extensive experience. Twelve thousand well-studied cases of one disease provide an almost illimitable wealth of clinical material. It has been one of the principal services of Joslin in the study of diabetes that the information derived from this vast mass of material has been at all times well digested and well presented. To that rule the manual offers no exception, and its two hundred pages provide words of wisdom on almost every point on which the diabetic patient is likely to seek counsel of his physician.

In general the manual follows the trend of the times and inclines towards higher and still higher carbohydrate diets. Even with these higher amounts of carbohydrate, however, a strict dietary regimen is still insisted upon; here it may be that the effect of many years of practice at a time when diet was the sole method of controlling the disease is still playing a part. The results obtained by these methods, however, are most convincing, and the onus still lies on the advocates of more liberal diets to prove that their patients will survive and flourish as have the diabetics of Massachusetts under Joslin's care.

The importance of obesity as the chief factor in determining the onset of diabetes is stressed many times. In this connexion we feel constrained to quote with strong approval the pithy remark: "No farmer has yet found a way to fatten hogs except with excess of food and little exercise." The problem of obesity in a nutshell!

The chapters on prognosis, on heredity and on marriage contain much that is new and valuable. The material on which these chapters are based is in every case derived from the Joslin clinic itself.

The tables and diagrams are clear and serve their purpose; that distinguishing insulin reaction from diabetic coma is a model of its kind. The book is one of the few diabetic manuals which are truly designed "for the mutual use of doctor and patient".

PRACTICAL NURSING.

"ESSENTIALS IN PRACTICAL NURSING" is alleged to embody "the methods and principles taught in the training school of the Royal Prince Alfred Hospital, Sydney"; in fact, one learns that many of the chapters are "almost identical with the original lectures" delivered by the matron to the first year nurses at that institution in which Miss Dorothy Armstrong, the author, was a trainee.¹

If it be true that the hand is the hand of Armstrong, but the voice is the voice of Boissier, the value of the book should be thereby greatly enhanced. However, for the purpose of this review, one has to consider its suitability for probationer nurses.

The book is essentially a compilation of the basic principles of practical nursing in a highly condensed form and at times the subject matter becomes so abbreviated that a raw probationer would have much difficulty in intelligently following the instructions, for example:

Page 24: "*Fracture Bed*. Have fracture boards across the bed under mattresses."

Page 36: "*Respiration*. Normal is 16-20 in adults, 20-24 in children, 24-30 in infants. Do not allow the patient to know you are taking it."

Page 93: "*Hot Baths*. To give the bath fill it with water and take it to the bedside. Place a sheet over the patient

¹"A Diabetic Manual for the Mutual Use of Doctor and Patient", by E. P. Joslin, M.D.; Fifth Edition; 1934. Philadelphia: Lea and Febiger. Demy 8vo., pp. 224, with illustrations.

²"Essentials in Practical Nursing: A Book for Nurses in Training", by D. Armstrong; 1934. Australia: Angus and Robertson. Crown 8vo., pp. 145. Price: 4s. 6d. net.

in bed, then lift under the sheet into the bath, supporting the head on a water-pillow."

Page 101: "*Ordinary Hot Fomentations*. Use Bavarian flannel or all-wool flannel two or three thicknesses. Cover with mackintosh and another piece of flannel and change frequently."

In view of the author's statement: "I wish to impress upon you the meaning of the terms 'restricted fluids' and 'copious fluids'. So often a patient is ordered one or other of these, and it seems almost impossible to get the order carried out because so few junior nurses apparently know the meaning of the terms", all ambiguity should be deprecated.

We cannot subscribe to the advice tendered on pages 65, 91 and 130:

"It should be explained here that the usual method of doing dressings in a ward is to keep two sterile towels for draping round each wound. After the dressing these towels are folded up, returned to the trolley and used again on the next patient, the sterile side being carefully preserved by always folding the towel sterile side innermost" (page 65).

"*Acetone and Diacetic Acid*. Ferri. Perchlor. Method. A purple or 'port-wine' colour denotes presence of acetone" (page 91). This colour may develop if diacetic acid be present in moderate amount, but never with acetone.

"*Gastroenterostomy*. Day of operation. Give rectal saline (saline 5 ozs. with glucose 50% 1oz.) when conscious and then six-hourly until 12 m.d. next day" (page 130). This solution being hypertonic would be absorbed only with difficulty.

In spite of the above shortcomings we believe that this manual will prove of distinct practical value for use in smaller hospitals where the junior nurses do not receive the advantage of a course of elementary lectures, for which purpose this book is presented as an efficient substitute. In the majority of cases the careful study and application of the handbook by a painstaking probationer will certainly be reflected in more efficient nursing.

Notes on Books, Current Journals and New Appliances.

A BOOK OF ESSAYS.

A SMALL book of essays, entitled "Unscientific Excursions", has been published by Professor F. Wood Jones, Professor of Anatomy in the University of Melbourne.¹ They are, as the distinguished author states in his preface, "the unacademic thoughts of one whose life is spent in academic routine". The essays reveal a lover of Nature and of the beautiful, a clear thinker and one who is no friend of humbug. We find a gibe at the evolutionary psychologist. Evolutionary psychology is the progeny of the monster that is worshipped today as psychology; its other parent is evolution. Amongst other things, the author would have the evolutionary psychologist develop a sense of humour. "My Friend in the Garden", a mantis, is a delightful chap, a curio; he is used to point a moral about man and his environment. The "Things Told only to Sinbad" have to do with rain out of cloudless sky, and they tell of the author's worship of the happenings at the dying of a tropical day. We approve of "Praise of the Unnecessary": "A man should become a student of the completely unessential if he is to attain to a fair degree of happiness." The titles of many of the chapters will of themselves intrigue the reader: "Of Astronomers and Pansies", "Of Thermometers and Bumps", "Of Atoms and Life", "Of Sinfulness and Necks", "Of Paint and Petrels", "Of an Understanding with the Ostrich". There are many others. We commend this little book to all our readers.

¹"Unscientific Excursions", by F. Wood Jones, D.Sc., F.R.S.; 1934. London: Edward Arnold and Company. Crown 8vo., pp. 207. Price: 6s. net.

The Medical Journal of Australia

SATURDAY, APRIL 6, 1935.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction, are invited to seek the advice of the Editor.

VISCERAL NEUROSES.

ONE of the most difficult problems that may confront the clinician is the differentiation of a functional from an organic condition. All medical practitioners sooner or later come across cases in which, after exhaustive examination, they label a condition as functional, only to find at a later date that some pathological change has become evident. The lesion may not have been suspected or, if it has been suspected, it may have defied every effort directed towards its discovery. In either case the medical practitioner will probably reproach himself, though it is obvious that he will not always be blameworthy. It is the outlook of the patient, however, that is important. To treat as functional a condition that is organic in origin is commonly and rightly regarded as fraught with disastrous results to the patient. Somehow the reverse view is not usually considered. But a moment's consideration will force the admission that the functional condition treated as if it had an organic origin may cause the patient (to say nothing of those who are

unfortunate enough to have to live with him) great distress, both mental and bodily, and may result in chronic invalidism with all that it entails. The modernist will say that present-day diagnostic methods—the test tube in the laboratory, the electrical apparatus at the bedside, and the penetrating eye of the radiologist—have led to a greater degree of accuracy in diagnosis. The conservative will reply that attention to modern methods, in short, what has become known as the worship of the test tube, has dulled the diagnostic sense of many or at least has given rise to laziness. Both assertions would probably be right.

Though doubtless every medical practitioner recognizes the importance of a differential diagnosis between functional and organic conditions, not every practitioner has studied the nature of the neuroses, how they can arise, nor yet how a start should be made if a cure is to be effected. Discussion of this subject has been suggested by a valuable contribution from the pen of John A. Ryle, physician to Guy's Hospital.¹ Ryle's paper is entitled "Visceral Neuroses", but much that he writes may be applied to all functional conditions. Under the heading of visceral neurosis he includes those disorders of visceral motility and sensibility which occur in the absence of organic disease. All these neuroses are due to loss of neuro-muscular rhythm. Ryle quotes the late James Paget, who discussed "stammering with other organs than those of speech". Paget wrote: "Stammering, in whatever organs, appears due to a want of concord between certain muscles that must contract for the expulsion of something, and others that must at the same time relax to permit the thing to be expelled." It may be recalled in passing that Garnet Leary, at the Hobart Congress last year, suggested that stammering might occur on the parade ground, while a musician was playing the piano, or while a golfer was swinging a golf club. The result of the want of concord between muscles is, as Ryle points out, inhibition or disorderly action with distress or, in the case of certain viscera, with actual pain. The victims of visceral stammering are, according to Ryle, commonly of kindred temperament with speech

¹ Guy's Hospital Reports, October, 1934.

stammerers. No doubt many will have had clinical experience that bears out this statement. The utmost importance attaches to the mode of origin of visceral neuroses. The first possible origin stated by Ryle is a previous but finally departed organic injury in the shape of an inflammation or irritation. A visceral neurosis may occur as a result of a specific sensitization or idiosyncrasy; in these circumstances, however, it is unusual for the symptoms to be traceable to a single specific factor. Ryle sees in external agencies, such as cold and the general physical effects of fatigue, emotion and worry, precipitating factors or "triggers" for the visceral neuroses. He also holds that the general state of physical tension accompanying chronic anxiety prepares the ground for many of the visceral neuroses. Finally, there can be no doubt that there is often a diathesis or inherited factor that is all important and that may underlie all other factors. Obviously the subject of a visceral neurosis has a supersensitive nervous system, and the repetition of symptoms, uncertainty and fear all help to perpetuate the condition.

If we know how visceral neuroses may arise and how they may be perpetuated, treatment obviously becomes the treatment of the individual and not of his condition. These disorders are not, as Ryle shows, hysterical. Attention must not be directed to the stammering organ. Explanation, reassurance and the use of sedatives are all in their turn important; and often it will be necessary to take a definite stand against such measures as rest in bed and the performance of surgical operations. People afflicted with visceral neuroses are sometimes found among those who are not happy unless they are subjected to one surgical adventure after another. Consideration of the treatment of these unfortunate patients brings us back to the question of diagnosis. If diagnosis is not correct, all efforts will be useless. Even Ryle, in his list of cases, quotes a patient who was treated for some time as if she had a functional condition, but who was found later to have an organic basis for her symptoms. We are thus back where we started. Ryle thinks that with adjustments of thought and a wiser curriculum it should be possible for a future generation to surpass our

own in bedside wisdom. We may well ask why we should wait for a future generation for the advent or the return of clinical wisdom; we can achieve it in this generation if we will.

Current Comment.

THE CEREBRO-SPINAL PRESSURE IN ARTERIAL HYPERTENSION.

CLINICAL medicine is becoming more and more permeated with the idea of attempting an exact expression of signs and symptoms. There are still, and always must be, many clinical findings and impressions of great value which can hardly be put into figures, but when it is possible to make an exact measurement of some physical state, it should be done. One example of this is in the evaluation of the blood pressure. Twenty years ago the practising physician did not possess a sphygmomanometer, except in a few instances; now no clinician is without one. Cynics may say that this is a pity, but it is obvious that where a great use for anything exists there will also be abuse. Cerebro-spinal fluid analyses are also a product of the more recent activities of the biological chemist, and so, too, is the exact measurement of the fluid pressure within the third cerebral circulation. This last, indeed, is much neglected, and the rough and ready measurement by the rate of flow of the drops through the puncture needle is still almost universally employed, except in hospitals. Probably the time will soon come when the pressure will be recorded on a simple manometer practically every time that the cerebro-spinal fluid is withdrawn. G. W. Pickering notes that the relation between the blood pressure in arterial hypertension and the cerebro-spinal fluid pressure has not been studied with any accuracy, and contributes an interesting paper on the subject.¹ The cases he investigated were those of persistent high blood pressure without the presence of any oedema. The patients were examined in a comfortable lying posture, without compression of the veins of the neck, and the cerebro-spinal pressure was registered on a manometer tube of one millimetre bore, a correction being made for capillarity. The blood pressure was read at the same time, and an estimate of the venous pressure was made by observing the level at which the neck veins (jugulars) collapsed. Further, an estimate of the colloidal pressure of the blood plasma, as compared with that of the spinal fluid, was made. It is important to record that this research revealed that there may be a definite variation of the cerebro-spinal pressure in the same person at different times, quite apart from any alterations due to fresh disturbances in the nervous system. The total range of pressures in all the patients examined varied from

¹ *Clinical Science Incorporating Heart*, Volume I, Number 4.

80 to 400 millimetres of water; these were divided into two groups, one containing those above 250 millimetres of pressure, and the other those below this figure. The patients in the first group, that is, those with the higher readings, were the younger; their average age was thirty-five years. In the second group the average age was fifty-six years. A still more striking fact is that the patients of the first group were all dead within nineteen months after the date of the examination; ten of these died in uræmic coma and three in convulsions, thought to be due to cerebral hæmorrhage. On the other hand, the patients of the second group, though showing a high mortality rate, for about two-thirds are dead, in a good number of cases were still alive. Great interest also centres around the condition of the *fundus oculi* in these hypertensive patients, for not only do a moderately large proportion of patients come under observation for the first time because they consult an ophthalmologist, but in the ophthalmoscope we have an instrument which enables us to judge by actual vision the state of the smaller arteries and veins, and sometimes to assess the amount of intracranial pressure. The arteriosclerotic type of fundal change consists of small and clearly defined white spots, usually unilateral, and associated with sclerosis of the retinal vessels, but rarely with swelling of the disk. The more serious albuminuric type of retinal lesion is characterized by bilateral swelling of the nerve head, large, more or less vague exudates in both retinae, and a star figure at the macula. Pickering quotes a number of authorities on the subject of the cerebro-spinal pressure in this latter form of retinopathy; he points out that the hypothesis that the changes are due to a raised pressure cannot be quite correct, for exudative lesions do not occur in other forms of raised intracerebral pressure. However, though the genesis of these exudates may be obscure, there seems little doubt that the essential lesion of the albuminuric form of retinitis is due to œdema, and Pickering finds that this œdema is directly related to the pressure in the cerebro-spinal circulation. As regards the other phenomena observed in hypertensives, he studied the attacks known as hypertensive cerebral attacks, and sometimes described as due to a "pseudo-uræmia", but found no constant relation with the fluid pressure. These attacks are thought by some to be caused by cerebral œdema; if this is so, it is not associated with a general raising of the pressure in the cerebro-spinal fluid. Pickering's findings may be summarized as follows. It was the younger patients who were found to have the higher cerebro-spinal pressures; in these there was usually a severe damage of the kidneys and the disease proved rapidly fatal. All patients with a cerebro-spinal fluid pressure of over 250 millimetres of water sooner or later were found to have albuminuric retinitis; practically none of the patients with lower pressures showed more change in the retina than the vascular lesions typical of arteriosclerotic retinitis. The prognostic importance of the retinal changes will be immediately

apparent. During attacks of headache, coma or convulsions not due to true uræmia, the cerebro-spinal fluid pressure was not found to be conspicuously altered. Finally, there appeared to be a definite relation between the diastolic blood pressure and the cerebro-spinal fluid pressure, and the author suggests that the former is of importance as a factor in determining the latter. The diastolic blood pressure has been known by physicians to be of greater significance than the systolic in the assessment of a hypertensive patient's condition, but perhaps this work will now invest it with an even greater importance.

THE DIABETIC JOURNAL.

IN the correspondence column of this issue will be found a letter from London practitioners in which they discuss the newly formed Diabetic Association. The first issue of *The Diabetic Journal*, published by the Diabetic Association, has been received. The editor is Mr. Hugh Walpole. This issue is interesting and should appeal to diabetics. Mr. H. G. Wells has contributed an opening "salutation". He states that in this journal diabetics will discuss life with one another. He states that diabetics are a high and austere cult and he adds that he has found diabetes an invigorating diathesis. Dr. Charles H. Best contributes an article on the discovery of insulin. Other articles include "The Work of a Diabetic Kitchen and Clinic", "Diabetic Diets", "Easily Prepared Suppers for the Busy Diabetic". Articles on such subjects as the problem of the convalescent diabetic, the pituitary gland and diabetes in children are not signed. Diabetes is recognized as an ailment about which the sufferer should know all that there is to know. Medical practitioners who have the care of diabetics are advised to see a copy of this quarterly journal. They will probably find it suitable for their patients.

ANNUAL MEETING OF THE BRITISH MEDICAL ASSOCIATION, MELBOURNE, 1935.

IN last week's issue an appeal to members of the Australian Branches was published in regard to attendance at the annual meeting of the Association to be held at Melbourne in September next. Too much emphasis cannot be laid on the character of the meeting—it is not a congress, but the annual meeting of the Association. Every member of the Australian Branches is entitled to attend without the payment of a subscription fee. Though the gathering is in effect one at which the Australian Branches will receive members from every part of the Empire, the Victorian members are acting as hosts and will provide entertainment. Members of the Branches who intend to be present should notify Dr. J. P. Major, the Honorary Local General Secretary, of their intention without delay. Unless the Victorian members know how many will be present, they cannot finalize their plans for entertainment.

Abstracts from Current Medical Literature.

BACTERIOLOGY AND IMMUNOLOGY.

The Aetiology of Mumps.

CLAUD D. JOHNSON AND ERNEST W. GOODPASTURE (*American Journal of Hygiene*, January, 1935), who recently reported the production of a non-suppurative parotitis in the *Macacus rhesus* monkey by the inoculation through Stenson's duct of the parotid gland with saliva collected from early cases of mumps, now present the result of an attempt to induce mumps in human volunteers with the virus of the experimental parotitis which had been carried through several successive passages in the monkey. Seventeen persons for inoculation purposes were made available. Three had had mumps during the preceding year, one had had numerous contacts with mumps cases without contracting the disease; and these four were used as controls. Among the remaining thirteen there had been no known case contacts and no known cases of mumps were in the vicinity at the time the investigation was carried out. The material used for inoculation was prepared as follows. Saliva was obtained from a medical student suffering from mumps during the first twenty-four hours of parotid swelling. By cannulation of Stenson's duct the parotid glands of a monkey were inoculated with one cubic centimetre of the saliva. On the sixth day following inoculation the monkey developed a bilateral swelling of the parotid glands with fever. The animal was killed and an emulsion of the glands was prepared with sterile normal saline solution. During the period of sixteen months the causative agent of the experimental parotitis was transferred in series from monkey to monkey for a total of fourteen generations. For a continuous period of four months the virus of the sixth passage was stored in a dry state after freezing and desiccation. The inoculum used for the inoculation of the human volunteers was prepared by thoroughly grinding two bacteriologically sterile parotid glands which were removed from two monkeys infected with the eleventh generation of the virus. The glands were removed at the height of the experimental disease and the emulsion prepared from them was kept frozen for three days. Just before use the emulsion was allowed to thaw and one gramme was added to twenty cubic centimetres of sterile normal saline solution. The volunteers were inoculated by having a stream of the emulsion sprayed on to the opening of Stenson's duct, about two cubic centimetres being used for each duct. After the emulsion was retained in the mouth for ten minutes, small cotton wool balls impregnated with

the emulsion were placed over the opening of the ducts and retained there for fifteen minutes. After this the nostrils were sprayed with the emulsion. The procedure was repeated the following day. Of the four controls, none showed any reaction to the inoculation or any evidence of contracting the disease. Six of the susceptibles manifested in eighteen to thirty-three days typical clinical mumps, three showed questionable symptoms and four remained well. In order to establish the relationship of the induced mumps to the virus used as inoculum, the saliva from a typical case was recovered and with it the experimental disease in monkeys was produced.

The Bacillus of Rhinoscleroma.

M. C. MORRIS AND L. A. JULIANELLE (*Journal of Infectious Diseases*, September-October, 1934) have studied several strains of the bacillus of rhinoscleroma with a view to determining this organism's biological and immunological relationships with Friedländer's bacillus. The organisms studied included representatives of types A, B and C of Friedländer's bacillus and ten strains of the bacillus of rhinoscleroma. The entire group showed an inability to liquefy gelatine or to form indol, but all were able to reduce nitrate. Variations in the Voges-Proskauer and methyl-red reactions occurred. The fermentation reactions of Friedländer's bacillus were variable and, in contrast the action of the bacillus of rhinoscleroma in the various sugars appeared more uniform. They were unable to change lactose, and no action on litmus milk occurred. Dextrose, maltose and mannitol were fermented without the production of gas. None of the strains was virulent for white mice when injected intraperitoneally. Types A and B of the Friedländer's bacillus proved virulent to mice, but type C was not. Agglutination tests of the bacillus of rhinoscleroma with antisera prepared against several strains of the organism and against different types of Friedländer's bacillus also yielded uniform results. The bacillus of rhinoscleroma and type C Friedländer were agglutinated equally well by each other's serum. By absorption tests it was proved that both these organisms removed specific antibody completely from either anti-rhinoscleroma or type C anti-Friedländer serum.

Protection Afforded by Vaccination during Colds in Infancy.

YALE KNEELAND, JUNIOR (*Journal of Experimental Medicine*, November, 1934) employed a vaccine containing pneumococci, *Bacillus influenzae* and hemolytic streptococci in an attempt to diminish the severity of the febrile and complicated forms of respiratory diseases in a dense infant population. A group of twenty-three infants in the Home for Hebrew Infants in New York City was used in the study with

a comparable group of twenty-three in identical surroundings as controls. The average age of each at the beginning of the investigation was 6-4 months. A course of nine subcutaneous injections of the vaccine was commenced at the end of October. The initial dose was forty-five million and the final dose seven hundred and fifty million organisms. The proportion of pneumococci to *Bacilli influenzae* to streptococci in the vaccine was 5:3:3. Early in February a second course of seven weekly injections was administered to the treated group. The initial dose in this course was one hundred and ninety million organisms, and the final dose one thousand million. Some local redness and induration followed the larger doses, but no febrile or constitutional reaction was observed. The two groups showed no significant difference in the incidence of minor respiratory infections; the number of individual respiratory infections of all types per child was 5-4 in the vaccinated and 5-8 in the control groups respectively. But a significant alteration in the severity of the respiratory infections, as measured by the number of days of fever that occurred, was noted. The results obtained indicated that immunity did not become manifest until a rather large amount of vaccine had been administered, and the immunity, when produced, lasted only two months.

Bacillus Pertussis in Cough Droplets.

HARRIET LESLIE WILCOX (*The Journal of Infectious Diseases*, September-October, 1934) investigated the cough droplets of children with infections of the upper respiratory tract to ascertain whether *Bacillus pertussis* could be recovered from cases other than whooping cough. One hundred and forty-nine children attending a clinic were examined and inquiries were made of relatives accompanying them as to the presence of a cold, the time of development of the first symptom, and whether the child had had whooping cough or been exposed to it. Plates of Bordet-Gengou medium, to which citrated horse blood was added, were held from four to five inches from the mouth during the cough, two plates being used for each child. The plates were examined over a period of ten days and the author summarizes her findings as follows: The inability to isolate the pertussis bacillus by the cough droplet method from patients with infections of the upper respiratory tract other than whooping cough, the negative results obtained by other investigators from cultures of material from the nasopharynx and larynx of persons not in contact with whooping cough, and the negative pulmonary and laryngeal cultures made *post mortem* on children who died from various other causes, add to the view that the pertussis bacillus is found only in persons who have or have had whooping cough and in those who have been in contact with the disease.

HYGIENE.

Health Hazards in the Oil Industry.

R. A. JEWETT (*American Journal of Public Health*, November, 1934) writes that oil, whether in its production, transport, refining or marketing, is one of the great industries of the United States of America. Chemical poisons, such as gases and vapours, are an accident hazard. The higher hydrocarbons, methane, ethane, propane, butane, are harmful—asphyxiant or irritant—but the lower hydrocarbons appear inert. An atmosphere of 0.2% is dangerous. Hydrogen sulphide is a dangerous accompaniment of certain oils (Mexican *et cetera*), five parts in a million being harmful. Carbon monoxide occasionally occurs, but most of the work is out of doors. Sulphur dioxide is used in treatment at refineries, four parts in 100,000 being a respiratory irritant. The partly filled tank is the most dangerous, owing to vapour accumulating. In refineries gas masks may be needed. Crude oil and distillates produce dry skin, cracking and dermatitis; only with paraffin and tars is malignant disease likely to occur. Tetraethyl lead is now handled by automatic apparatus even in marketing; for example, in garages the hazard appears negligible. Sandblasting, used freely in cleaning apparatus, has given rise to silicosis. The chief problems among employees appear to be general matters of health. Mixed respiratory vaccine proved of 100% value in at least 75% of persons. About 13% received no benefit and nearly all these suffered from chronic infection—*sinusitis et cetera*. The oculist reported 30% as having subnormal vision, 7% as having pathological eyes, 2% required vocational placement. Of the 22% wearing glasses, 58% were improperly fitted. A Wassermann test is a routine measure and 3.4% gave positive reactions. No less than 68% of these denied any knowledge of infection (the vast majority, the writer thinks, sincerely). Most of the patients were over forty years of age, married and with families, so that treatment is a difficult problem. The control of industrial health is the need rather than attention to industrial hazards.

Typhus Virus and Brill's Disease.

HANS ZINSSER (*American Journal of Hygiene*, November, 1934) writes on varieties of typhus virus and on the epidemiology of the American form of Brill's disease. Both the classical European typhus and the Mexican or New World variety may occur together in the same area. Though similar to the European virus serologically, the New World virus is "murine" and more virulent to rodents. The European "humanized" virus remains true to type, in spite of every endeavour by animal passage *et cetera*

to modify it, except temporarily. It is possible that it has originally changed by a succession of man-louse-man passages, and such a change has been noted in guinea-pigs temporarily. Brill's disease in North America is seen chiefly in immigrant populations in the north-east coastal cities of the United States of America. Ninety-six per centum of patients were of foreign birth, chiefly Russo-Jewish; even in children a similar preponderance is seen. Of the 471 foreign born, 93.6% were born in the endemic typhus regions of Europe, 80.4% in Russia itself. The majority of the patients had been in the United States of America for many years; only two were recent immigrants. In less than 2% did more than one case occur in the same house. Occupation showed no association and the sexes were almost equally numbered. The seasonal occurrence, June, July, August, corresponds to Maxcy's experience in southern United States of America and is in sharp contrast to the winter epidemics in Europe and also in Mexico. In southern United States of America the origin is rat-rat-flea and the winter louse infestation of Europe does not occur. Brill's disease, judging by animal behaviour, represents the European typhus as contrasted with tabardillo of Mexico and Maxcy's south-eastern disease. The inter-epidemic reservoir is still unknown. The Boston figures are incompatible with virus reservoir in domestic animals or insects, but must be maintained in the bodies of infected human beings. It is possible that the cases are recrudescences of infections in early life in Europe, implying long periods of latency. This agrees with the small numbers—in New York in 1910, 22 cases of Brill's disease among 1,200,000 Jews. It also agrees with the progressive abatement of the disease in the United States of America.

Poliomyelitis in California.

In a leading article in the *American Journal of Public Health*, November, 1934, a review is given of a symposium on infantile paralysis at a recent meeting of the American Public Health Association in California. The epidemic of poliomyelitis began earlier than usual in May and ended in September, with the peak in June; the cases totalled 2,372. Several unusual features are noted. The age incidence showed that a great number of adults were affected. In previous epidemics 78% of patients were under eight; in 1934 only 44% were under ten years of age. The death rate was low, probably about 2% to 3%, ranging from 1.5% to 6.8% in different areas. A high percentage of households (22%) showed multiple cases, and the high infectivity also showed itself in infections of doctors, nurses and other hospital workers. In Los Angeles, where 95% of the patients entered hospital, 137 such infections took

place, 15 doctors, 58 nurses and 39 student nurses becoming infected. Of those working in the contagious diseases unit, 14% were infected, as against 4.5% for other parts of the hospital. Many factors have been mentioned as possible causes, but personal contact appears dominant. In the General Hospital 121,000 cubic centimetres of serum were used (45% from convalescents). Adults over thirty years of age were used as donors, and the serum of at least ten was pooled. No definite opinion as to its efficacy in treatment is given, though the infections in which serum was used appeared milder and paralysis was less common and less intense. The figures give no support to a prophylactic effect. Adult serum and convalescent serum have no difference in value. So overwhelming was the effect on hospital staffs that medical and other students had to be employed to reinforce the personnel.

Mixed Infection in Pneumococcal Pneumonia.

M. FINLAND (*The Journal of the American Medical Association*, December 1, 1934) calls attention to the importance of mixed infection in cases of pneumococcal pneumonia, and more particularly to those in which the associated organisms are different types of pneumococci. In the examination of the records of approximately 2,000 cases of pneumococcal infection, 133 were found in which two or more organisms were associated, at least one of these a pneumococcus. In 96 patients the pneumococcus was associated with one or other of the various types of streptococcus, staphylococcus, the *Bacillus typhosus*, tubercle bacillus or Friedländer's bacillus. A total of 37 patients had more than one pneumococcus type, including four with three distinct serologic groups and four from whom other organisms were isolated in addition to two types of pneumococci. The cases fell roughly into three groups: only one bacterial agent might be responsible for the pulmonary infection, the other organisms present being incidental, or more than one organism might be invading simultaneously, either at the same or at different sites, or there might be successive invasions by different organisms at the same or at different sites. Examples from each group are quoted. As the efficacy of serum treatment of pneumonia depends strictly on its type specificity, correct and rapid aetiological diagnosis is essential. Where pneumococci of different types are present, the part played by each type must be recognized. Mixed infections can account for certain failures in cases otherwise adequately treated with specific agents, and may be the explanation of relapses in certain instances after seemingly striking improvement following the administration of specific antiserum.

Special Articles on Treatment.

(Contributed by request.)

XLVII.

THE TREATMENT OF MENOPAUSAL SYMPTOMS.

LAY terminology has no more accurate or descriptive name for a definite clinical condition than that of "change of life". The "change of life", or menopause, is just what the term implies. It is fundamentally a glandular story, a process of adjustment whereby the female body has to accustom itself to carrying on its functions without the assistance of a glandular secretion (the ovarian hormone) which it has had for the past thirty to thirty-five years. That such a radical change can occur within the comparatively short period of a few years without more profound symptoms is nothing short of remarkable.

To apply rational treatment when this adjustment is not so perfect, one must review briefly the course of events in the endocrine system.

From menarche to menopause the female organism is subjected to a varying activity of a coordinated glandular system. Each month sees a waxing and waning in the supply of the ovarian hormones. The premenstrual week is characterized by a rise in the tide of ovarian hormone. This is often a time when a woman feels at her best and is most efficient mentally and physically. Her mental composure is most complete, the trivialities of life and the monotony of existence worry her least, and sexually her appetite is at its keenest. With the onset of menstruation the ovarian tide ebbs, and it is a very fortunate woman who passes through her "unwell" period without feeling some degree of irritability or depression. The lack of ovarian hormone in the general blood stream is undoubtedly the basic cause of this nervous upset, aggravated, no doubt, by the physical discomfort attendant on the menstrual function. This period, however, is temporary and a restoration of the endocrine balance is a matter of a day or two.

Between the ages of forty and fifty, however, there is a more marked and a permanent ebbing of the ovarian tide. Extending usually over a period of two to five years there is a gradual decrease in the production of the ovarian hormone, and the process of adjustment is not so easily accomplished. The symptoms of this period are well known and are mainly nervous in character; and this introduces another vital factor in the production of the symptoms of the menopause, that is, the nervous "make-up" of the woman.

Broadly speaking, women can be regarded as being possible of classification into two categories: first, the highly strung, sensitive type and, secondly, the placid type. Each constitutes a different type of nervous temperament, and each has its advantages and disadvantages. The highly strung are usually the bright and vivacious. They are "the life of the party". The disadvantage, however, is that their labile type of nervous system renders them more prone to a "nervous breakdown", and when the menopause arrives they are more likely to suffer from its symptoms. The second category embodies the woman who "never gets upset", whose ship of life runs on an even keel, the troubles of life producing at the most a ripple or two on their placid sea. They never suffer from "nerves" and pass, as a rule, very smoothly over the menopausal bar.

In my opinion the symptoms of the menopause are the result of these two factors—glandular (ovarian) deficiency and the type of nervous temperament.

The symptoms vary considerably from the slightest "hot flush" (due to the instability of the sympathetic nervous system) to the most profound degree of depression, lack of concentration, loss of interest in everyone except oneself, the development of a thoroughly introspective

nature, often resulting in a change even of disposition. At this stage of life any of the nervous disorders (to which the psychiatrist will attach the requisite names) are liable to develop or, if they have previously existed, are likely to be aggravated.

Physically we see the tendency to adiposity, "the middle-aged spread" (which is the result of the temporary increase in activity of the anterior pituitary following the cessation of ovarian function). This adiposity, bringing with it a certain dulness, apathy and lack of energy, still further harasses the woman's mental state. The menopause has been the cause of much domestic unhappiness, and the attitude of the husband or relatives becomes almost a third factor in the symptomatology.

This preamble to a consideration of the treatment of symptoms of the menopause is, I think, helpful in formulating a correct line of treatment.

Treatment should be along two lines, and neither can claim results in the absence of the other. The treatment is: (i) glandular, (ii) psycho-therapeutic. It is just as absurd to say that the whole treatment of the menopausal woman is psychological as it would be incomplete to regard it as purely glandular. There must be a glandular basis to replace or make up to woman's body what her own glands are producing in insufficient quantity.

By administering the requisite ovarian hormone one converts a somewhat abrupt process of adjustment into a lengthier one, and in common parlance one lets the woman down lightly and gives her nervous system a chance to accustom itself to doing without the endocrine assistance she has been getting for the past thirty to thirty-five years.

Having realized this, I think a large amount of the treatment becomes psychological. By this I do not mean that the patient ceases to be within the realm of the general practitioner's treatment. On the contrary, he should be the ideal person. It is not a learned psycho-analysis which is required, but a large amount of ordinary human understanding.

In the first place the doctor must have the complete confidence of his patient that he is definitely interested in her—not simply a bromide mixture and the assurance that it is "only the change of life" and "nerves". The first expression, "only the change of life", if it gives the patient any indication that you are making light of her trouble, closes immediately any avenue of further psychological approach. The latter term, "nerves" is a pernicious one. I have never told a woman she has "nerves". It means nothing; we all have nerves. What one means is that the nerves have acquired a state of instability, loss of adequate cerebral control, are fatigued and starved of their usual endocrine food (the ovarian hormone). To tell a menopausal woman she has "nerves" is usually the signal for her friends and relatives to assume immediately that there is "nothing really wrong with her" and that all the unfortunate woman requires is to be told to "pull herself together". There is nothing more cruel.

The attitude of the husband or other person with whom the patient is most in contact is all important, and the doctor should interview the husband and explain thoroughly the position. It is a difficult one, particularly if there is not complete domestic happiness. Fortunately, in my experience, in the worst cases of menopausal depression the patients seem usually to have the most understanding husbands. The husband's attitude is to be sympathetic but not indulgent, and firm but not hard. All will agree that this is a very difficult medium for any human to strike.

The doctor should see the patient often and should encourage her to consult him immediately if she is concerned about herself—which is frequently.

Numbers of these women, becoming introspective, worry about the possibility of cancer or other disease. They should be advised to consult the doctor immediately for an examination and reassurance. To reason the matter out for herself must always be unconvincing to the patient who does not know sufficient of her anatomy and physiology really to convince herself that "everything is all right". If you can save her a couple of weeks of mental torture in this way, you save her nervous system a big strain, and

the nervous system of the menopausal woman stands strain very badly.

A judiciously and not too oft repeated tonic or nerve sedative does good. A change of surroundings, a change of faces and topics of conversation all help a great deal. A holiday (if it can be afforded) provides all of these.

The patient must get an average amount of sleep, and I regard this as most important. Sleep is Nature's method of restoring and building up nervous energy, and the menopausal woman who does not sleep soon reaches a state of complete nervous exhaustion. One sees a vast improvement in these people after a few nights' sound sleep.

The psychical aspect of the treatment involves a thorough understanding of human emotions and a sympathetic appreciation of the woman's difficulties. I know of no one in a better position to supply these elements than the family doctor.

The glandular treatment, as referred to previously, consists in the administration of the ovarian (follicular) hormone. Opinions of expert clinicians differ as to the efficiency of this treatment. My experience of it has been extremely satisfactory. Failures are due not to the inefficacy of the glandular substance, which is the most rational line of treatment one could adopt at the menopause, but more to the fact that many physicians do not realize that the intramuscular injection or tablet forms only part of the therapy and does not replace the psychical element of treatment. Both are necessary.

The course of treatment depends on the severity of the condition. The mildest nervous irritability and occasional "hot flush" will respond to ovarian hormone in the form of tablets given by mouth. There is a large variety of preparations of this ovarian hormone. This follicular hormone is comparatively easy to produce, and one cannot go far wrong by using one of several products at present on the market—"Hormatone", "Progynon", "Agomensin" *et cetera*. My best results have been obtained with "Prokliman" (Ciba). The small dose of sedative incorporated in the tablet, I think, increases the efficiency of the hormone. Sceptics of endocrinology offer the obvious criticism, namely, that improvement is due to the sedative. That may be so. The point is that both the sedative and the hormone are indicated, and results, if obtained, give one a relieved and satisfied patient, and such a nicety of discrimination is unnecessarily critical.

My custom is to administer one tablet, three times a day, half an hour before meals, and to continue the treatment for two to three months or until the symptoms disappear. After this further tablets can be taken from time to time, depending on any return of the symptoms. Any glandular tablets should be given well before meals. In this way the tablet is given a good chance of being broken up and absorbed before being lost among the food. In the severe cases or to those who do not respond satisfactorily to the oral treatment, I give a course of intramuscular injections of ovarian hormone. I have had most success with "Progynon" (Schering).

In the moderately severe cases the ordinary strength of "Progynon" (100 mouse units per cubic centimetre) is given. The dose suggested is one cubic centimetre on alternate days for six doses. A second or third course of injections can be given later, depending on the progress of the patient.

In severe cases I suggest giving the concentrated form, "Progynon Bolesum" (10,000 mouse units per cubic centimetre), using the same dosage (one cubic centimetre) on alternate days for six doses. The tablets are given in each case as well, as indicated earlier.

The injections are practically painless and produce no after-effects whatever. No ill-effects result from the over-administration of ovarian (follicular) hormone. In this respect it differs from the hormone of other endocrine organs (pituitary, thyroid, adrenal).

Finally, there is one aspect of the menopause to which attention should be drawn. The onset of the menopause is usually heralded by a scantiness and irregularity of the menstruation. Occasionally the menstrual loss becomes spasmodically heavier than normal. An actual "flooding"

may occur. One should be cautious about assigning such a symptom to the "change of life" before carefully excluding a uterine cause for the bleeding—fibroid tumour or carcinoma, which frequently makes its first appearance at this age.

Any physical state, such as prolapse, chronic cervicitis and leucorrhoea, should receive attention, any condition which may add to the patient's discomfort, either physical or mental, being thus removed.

What I have said with regard to the treatment of the natural menopause applies also to the artificial menopause, either surgical or radiological.

In this type of menopause treatment should be instituted immediately; in fact, it should be preventive rather than curative. In this respect I feel that the practice of removing the ovaries along with a non-carcinomatous uterus, even though the ovaries are healthy, is not wise. The ovary is an extremely valuable gland, and there does not appear to be sufficient justification for removing it (as is often done during a hysterectomy) unless it is definitely unhealthy or there is a suspicion of carcinoma in the uterus.

As a gland it is comparable in all respects with the male testis, yet the removal of a testis is regarded as an operation requiring great deliberation.

BRUCE MAYES, M.B., B.S., F.R.C.S.
(Edinburgh), F.R.A.C.S.,

*Honorary Clinical Assistant to
Honorary Gynaecologist, Brisbane
General Hospital.*

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Renwick Hospital for Infants, Sydney, on November 15, 1934. The meeting took the form of a series of demonstrations by members of the honorary staff. Parts of this report appeared in the issues of March 16 and 30, 1935.

Pneumococcal Meningitis.

DR. W. D. K. CRAIG showed a male patient who had been admitted to hospital on August 27, 1934, at the age of nineteen months. For two days prior to admission he had been irritable and drowsy, had been subject to vomiting and had suffered from thirst. He had been holding his head back for two days, had been sleeping poorly and crying in his sleep. He was constipated; he had no cough. He had fallen three days previously and cut his lip on his teeth.

At the time of admission the temperature was 39.1° C. (102.4° F.), the pulse rate was 140 and the respiration rate 44 per minute. The general condition was good. The child was very irritable; the tongue was dry and furred. The pharynx was not unduly congested. No abnormality was detected in respiratory, urinary and cardio-vascular systems. The child lay with the head retracted; the pupil reflexes were active; there was no strabismus or nystagmus; the knee jerks were not exaggerated; Kernig's sign was present; there was no paralysis or purpuric eruption. By lumbar puncture 25 cubic centimetres of turbid cerebro-spinal fluid under increased pressure were obtained. Polyvalent meningococcal antiserum was given intrathecally. Examination of the fluid revealed many mononuclear cells and pneumococci. For the next nineteen days the temperature fluctuated between 35.6° C. (96° F.) and 39.4° C. (103° F.), swinging daily, and the pulse rate between 120 and 176 per minute. Lumbar puncture was performed each day or on alternate days, the fluid becoming purulent, then gradually becoming clear, 10 to 35 cubic centimetres being obtained at each puncture. Pneumococci

were repeatedly found in the fluid. During the next nine days the temperature rose every second or third day; then for six weeks temperature, pulse rate and respiration rate remained normal. When discharged from hospital the child appeared to be normal in every respect except that the knee jerks were slightly exaggerated.

Rickets.

Dr. L. B. DIAMOND showed a male child, aged one year and nine months, who had been "blue" for three weeks after birth and had been in hospital, suffering from malnutrition, from June 27 to July 11, 1933. On February 6, 1934, X ray examination revealed early rickets. Cod liver oil and "Adexolin" were then given, and gradual improvement occurred. On October 23, 1934, the rickets did not appear to be active, by X ray examination. The child was able to sit up in the thirteenth or fourteenth month; the teeth began to erupt in the thirteenth month. During the week immediately prior to the meeting he had commenced to walk. He was a moderately well-nourished child; the space between the eyes was wide; the fontanelles were closed; there was very little beading at the rib junctions; the abdomen was protuberant; there was a condition of *genu valgum*.

A Case for Diagnosis.

Dr. Diamond also showed a male child, aged eleven weeks, who was one of a family of three, one of whom had been still-born. The birth had been precipitate; the birth weight had been 3.7 kilograms (eight pounds three ounces). The child had been breast fed since birth. He had held his head towards his left shoulder since birth; but this attitude had become less pronounced during the week before admission. Soon after birth a swelling had been noticed on the back of the head, but had gradually disappeared. The child took food well and was putting on weight. The bowels acted regularly. There was no cough. Examination revealed a bright, happy, playful child in good general condition; the knee jerks were exaggerated; muscle reflexes and tone were normal. There was a tendency for the head to be held slightly to the left; flexion of the head was restricted; movements in other directions were unrestricted; the anterior fontanelle was widely open; the left side of the face appeared to be flatter than the right; the right zygomatic bone was prominent. X ray examination of the skull revealed no abnormality.

Pyloric Stenosis.

Dr. GORDON LOWE showed two patients who had been operated on for pyloric stenosis. The first was a male child who had been admitted on April 24, 1934, at the age of seven weeks. He had vomited immediately after each meal for the three weeks prior to admission; before that he had not vomited. On the day of admission the vomitus had been shooting from the mouth. The mother had not noticed constipation or decrease in the quantity of urine. The child had lost 200 grammes (seven ounces) weight during the previous two weeks. Examination revealed the patient to be in moderately good general condition and not greatly dehydrated; the subcutaneous tissues were lax; no mass was palpable in the abdomen; peristaltic waves were not visible. A test feed of a 10% solution of glucose was given; after this peristaltic waves became visible and projectile vomiting occurred. Ramstedt's operation was performed the following morning under open ether anaesthesia. An olivary tumour of the pylorus was observed; there was no pronounced hypertrophy of the stomach musculature. The patient was discharged eighteen days after operation, well and gaining weight.

Dr. Lowe's second patient was a male infant, aged one month, who had been admitted on October 21, 1934. For the seven days prior to admission he had vomited at irregular intervals after food; at times he vomited more material than he had taken at the previous meal. The mother said that the food shot out of the mouth. He had had no bowel action for four days; the urine was very

scanty. The patient's general condition was poor; he was very dehydrated. The stomach outline and peristaltic waves could be observed. A test feed of a 10% solution of glucose was given; projectile vomiting followed. Two hours later Ramstedt's operation was performed under open ether anaesthesia; a large pyloric olivary tumour and hypertrophied gastric musculature were found. Convalescence was uneventful; breast feeding was continued; the child gained steadily in weight.

Anal Stenosis.

Dr. Lowe also showed a girl, aged eight months, who had been admitted to hospital on October 10, 1934. She had been constipated for four days prior to admission and had been straining and grunting at stool for three days. When she strained she passed a small quantity of yellow fluid by the bowel. She was not taking her food well. There was no vomiting. She had suffered from constipation for months and had gradually become worse. Examination revealed that the child was in good general condition and was not shocked. There was no distension or rigidity of the abdomen; a firm movable mass could be felt in the middle line in the lower part of the abdomen. The anal orifice would admit only the tip of one finger.

Frequent bowel douches were given and aperients were freely employed. The mass gradually descended. The anal sphincter was dilated digitally every day for a week. An extremely hard faecal mass could be felt in the rectum. Under general anaesthesia on October 20, 1934, this mass was broken down and scooped out, and the sphincter was stretched. After the operation the child had frequent relaxed stools and consequently became somewhat dehydrated. At the time of the meeting the condition had improved, though the stools were still more frequent than normal. Dr. Lowe remarked that at the time of admission the case resembled intussusception.

Skiagrams.

Dr. ERIC W. FRECKER showed a collection of films representing the general utility of X ray examination in the diagnosis and treatment of disorders in infancy.

A series of skiagrams of the chest demonstrated the appearance of the various forms of pneumonia; it was emphasized that the diagnosis by radiological means could often be made in that troublesome period during which the child was very sick, all physical signs were absent, and the relatives were pressing for an absolute diagnosis. Dr. Frecker said that physical signs in infants were notoriously deceptive; but the unmistakable evidence of the radiograph would often clinch an early diagnosis that was possible at the time in no other manner. Unsuspected predisposing causes, such as rickets and congenital malformation of the heart, and even miliary tuberculosis, might be revealed in the chest film. Further films illustrated the accurate and early diagnosis of such complications as empyema, pneumothorax and collapse. The object of this display was to point the moral that no chest in the infant, as in the adult, was completely examined until it had been examined by X rays.

The diagnosis of disease by epiphyseal and bone changes was also dealt with in relation to rickets and scurvy. A series of films taken of a scorbutic infant, followed from the stage of diagnosis to that of clinical healing, formed a prominent part of this section. Dr. Frecker hoped to report this case fully at a later date.

Dr. Frecker said that the importance of X ray examination in cases of scurvy lay in the fact that this was the only means of confirming a doubtful clinical diagnosis, if the therapeutic test of corrected diet was excepted.

A few films of fluid rickets were included. Dr. Frecker remarked that such appearances were becoming less frequent in an X ray department owing to the vigilance of the general body of the profession. The tendency seemed to be to diagnose rickets when not present rather than to miss the existing disease. In both these deficiency diseases the obligation lay upon the radiologist to detect from his films the early rather than the well developed stages,

; he was
tic waves
of glucose
ours later
en ether
d hyper-
alescence
the child

which were obvious both clinically and radiologically. Often, when he could not decide with certainty, he could put forward a timely and guiding suggestion. On the other hand, the practising physician might with advantage refer his infant patients more often for X ray examination of the epiphyses. This was frequently done for rickets, but, outside children's hospitals, rarely for scurvy.

A miscellany of films depicting various bone conditions and congenital abnormalities completed the demonstration.

NOMINATIONS AND ELECTIONS.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

McQueen, Ewen Neil, M.B., B.S., 1935 (Univ. Sydney),
181, Liverpool Road, Ashfield.

Ratner, John Lewis, M.B., B.S., 1931 (Univ. Sydney),
30, Camden Street, Newtown.

Medical Societies.

THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING OF THE MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA was held at the University of Adelaide on October 5, 1934.

Duboisia Leaves.

PROFESSOR C. S. HICKS said that in the early days of colonization of Australia it was noted that the natives, wherever found, chewed the leaf of a plant which was identified at an early date as *Duboisia*. The generic term "pituri" was applied to the chewed mass, to which the natives added the ash of any recently burned twigs, much as the chewers of the areca nut used lime.

Duboisia myoporoides, which grew in the coastal areas of the east in particular, had been shown by Merck to contain hyoscyamine, scopolamine and pseudo-hyoscyamine, yet the leaves which were identified by explorers as those used for "pituri" were undoubtedly from *Duboisia hopwoodii*, concerning the alkaloids of which doubt has existed up to the present. Liversidge, working on small quantities of the fragments of leaf and twig sent him by explorers, had been unable to establish a satisfactory combining weight, owing to difficulties with the platinichloride, but he described a pungent smelling oil, which, on the slender basis of his analyses, he considered not to be nicotine. Petit, however, using still smaller quantities, satisfied himself that it was nicotine; and Rothera later, using more material, and after its botanical identification as the leaves of *Duboisia hopwoodii*, concluded that the alkaloid was nicotine and that there was no other alkaloid present.

Recent investigation in the field by the Anthropological Committee of the University of Adelaide showed that the substance of choice for use as "pitchery" was a variety of *Nicotiana*, strangely enough not *Nicotiana suaveolens*, and that *Duboisia* leaves were used, either admixed in some tribal instances or alone when *Nicotiana* was not available. To what extent the results of Liversidge and Petit were confused on this account could not be determined. Rothera's material was, according to him, identified. Using a large amount of material collected in the field in Central Australia, certain preliminary data had been established as a result of investigations carried out in the Physiological Department of the University of Adelaide.

There were at least two water-clear oily alkaloids boiling at 34° C. and 117° C. respectively under 4-3 millimetres pressure. Tables were exhibited comparing the properties of the alkaloid with the higher boiling point with those of nicotine and nor-nicotine, recently isolated by Ehrenstein.

The results, so far as they went, suggested that the substance might be a dextro-rotatory nor-nicotine, but further work was necessary to establish this completely. The toxicity was nearly four times that of nicotine (using the rat) and the symptoms were typically different. This was suggested by the fact that when used alone as "pituri" the quantity chewed was smaller than when *Nicotiana* leaf was the material used. The leaves, moreover, were used to poison water holes to enable the natives to catch the emu, whilst camels succumbed after eating only a small amount. A complete investigation was at present in progress of both the chemistry and pharmacology of the alkaloids.

Professor Hicks said that Mr. H. Le Messurier had assisted in this work.

Frambœsia.

DR. C. J. HACKETT, in a brief talk, called attention to certain facts which had come to his notice during the course of his recent stay in the Northern Territory of Australia, while working under a grant from the Sheridan Research Fund of the University of Adelaide. These dealt with the widespread distribution of frambœsia and the apparent absence of syphilis among the native population. He concluded by suggesting that in earlier times frambœsia was widely spread over the whole of Australia and that perhaps the disease which had been reported by observers (of varying qualifications) from early times to comparatively recently as syphilis, was in fact frambœsia.

A discussion on the difficulties of distinguishing syphilis from yaws then took place.

Correspondence.

AN INTERESTING SCALP CASE.

SIR: Further to my case report on "an interesting scalp case", I beg to report having seen Mrs. D. today. The corrugations have disappeared from the scalp now, so it is not a case of *cutis verticis gyrata* after all. The tissue reaction in the scalp led to a condition of *pseudo-cutis verticis gyrata* owing to lymphatic blocking. I feel, however, that with recurrences a permanent condition of *cutis verticis gyrata* would most probably result.

The present condition of the patient is an infected infiltrated eczema of the face, ears and neck. On the back of the neck there is at present a large plaque of infiltration one and a half by one and a half inches. The surface of this plaque shows corrugations of smaller dimensions that were on the scalp previously. The plaque resembles a piece of oedematous scrotum "let into" the skin. The present attack has been precipitated by ? contact with stink wort weed plus applications of a patent medicated oil of green colour.

Yours, etc.,

JAS. M. O'DONNELL, M.B., Ch.M.

Padbury House,
170, St. George's Terrace,
Perth.

March 19, 1935.

THE DIABETIC ASSOCIATION.

SIR: We wish to draw the attention of the medical profession to the Diabetic Association that has recently been formed in this country. The association exists primarily to provide an organization for the benefit and service of diabetics. It hopes to promote further study and research and to safeguard the general interests of diabetics. It aims at improving those social and physical disabilities which handicap particularly the poorer

diabetic, by increasing facilities for treatment and care. Thus it will establish convalescent homes, schools and holiday homes for children, boarding houses and restaurants where diabetics can obtain suitable food, all of which are badly needed.

Information on these matters will be circulated among members by means of the *Diabetic Journal*, the first number of which is now published. The subscription, which includes the journal, is one guinea *per annum* for richer, 2s. 6d. for poorer members.

Membership is open to all diabetics and those interested in the subject. Most doctors especially interested, at hospitals and teaching schools, have already joined and given their support. The undersigned are acting as their representatives in writing this letter. A good start has been made under the presidency of Mr. H. G. Wells, but the existence of the association must be unknown to thousands of diabetics. We would ask all doctors interested to join themselves and/or bring the association to the notice of their diabetic patients, inviting them to become members.

The idea that those who have found renewed health and strength from a particular treatment should help to bring the same to others, less fortunate, is one that appeals to many.

Full information, membership forms, journal *et cetera* can be obtained from the Secretary, The Diabetic Association, 59, Doughty Street, London, England.

Yours, etc.,

E. E. CLAXTON.
G. GRAHAM.
R. D. LAWRENCE.
OTTO LEYTON.
STELLA CHURCHILL.

59, Doughty Street,
London, W.C.1,
February 14, 1935.

THE ÆTIOLOGY OF GENERAL PARALYSIS OF THE INSANE.

SIR: I would like to draw the attention of practitioners to the article contributed by Dr. Brothers on the ætiology of general paralysis of the insane in your issue of March 16. There can be no question that the treatment given by many in the early stages of syphilis is woefully inadequate. Others unfortunately are satisfied when the patient's blood gives negative results to the specific tests on a few occasions or at certain fixed intervals; nevertheless those of us dealing with the end conditions of syphilitic infection frequently find such patients with all the signs of general paralysis within a few years of the cessation of treatment. No one who undertakes the treatment of a case of syphilis should rest satisfied that his patient is free of the infection until such time as he has made a careful and full examination of the cerebro-spinal fluid. If he does so, he will be astonished at times by his findings.

I have seen a case of acute confusional insanity make an excellent recovery and yet a routine examination fortunately showed us the typical findings of general paralysis of the insane when the cerebro-spinal fluid was examined and enabled us to give adequate treatment. In this case syphilis was not even suspected. We have had repeatedly returned soldiers who had vigorous treatment for some years and yet finally developed general paralysis. It is my opinion that cases of syphilis refractory to routine treatment should be treated by benign malarial infection, and I further believe a very forward step would be taken if primary syphilis were similarly treated. Dr. Brothers has treated one case of primary chancre of the lip by means of malarial rigors without any other aid and for the past two years the patient has given every indication of complete cure. We would be glad to extend our investigations in this suggested line of treatment, but it is extremely difficult to persuade patients to come to us especially for a period of a few months.

Might I, in conclusion, plead for a routine cerebro-spinal fluid examination, prior to the syphilitic patient's dismissal.

Yours, etc.,

J. CATARINICH.

Mental Hospital,
Mont Park,
Victoria,
March 21, 1935

THE WHITE MAN IN THE TROPICS.

SIR: Dr. Nimmo's letter seems to me to be a valuable contribution to this discussion. He states that there is a sparse indigenous infected population in the extreme north of Queensland, chiefly in the Cape York Peninsula. But the fact remains that in the populated portion of tropical Queensland, including fair-sized cities, there is no such population and there is practically no tropical disease. Furthermore, the vital statistics, including the extreme north, are excellent.

In previous communications I have definitely pointed out the danger of importation of tropical disease from the mandated territories, where malaria especially is almost universal and at present almost impossible to control. The control—so simple in principle—is excessively difficult in practice, and at present 650 million people are infected, with an annual mortality of two million deaths.

But one curious fact was borne in on me during four years spent in Egypt and Palestine. Egypt is the centre of a number of countries heavily infected with malaria, namely, Syria and Palestine, East Africa and Salonika and its *Hinterland* and, indeed, India. People from these infected countries are constantly entering and passing through Egypt, which contains a sufficiency of mosquitoes and also sandflies. Yet in Egypt malaria is not common. The country, of course, is rainless, but on many of the pools of water aquatic birds are found, and in the sweet water canal there is an abundance of fish. Ducks are particularly useful in destroying mosquito larvae.

Egypt, of course, is not free from a number of other tropical diseases.

If in Australia malaria did become established further south, Australians would indeed be sorry for themselves, as only those who have had to deal with it fully appreciate its gravity. But so far so great a disaster has been avoided.

In my opinion, the work of the Native Medical School at Suva indicates the sensible course, which we might well follow. It is economical, efficient and thorough.

Yours, etc.,

JAMES W. BARRETT.

103-105, Collins Street,
Melbourne, C.1,
March 25, 1935.

Obituary.

DAVID MONTGOMERIE PATON.

DAVID MONTGOMERIE PATON, whose death has been recorded in these pages, was born at Hurlford, a village two miles from Kilmarnock, Ayrshire, Scotland, on April 11, 1856. His father, William Paton, was one of the last of the old Scottish parish schoolmasters who taught English, Greek, Latin, French, higher mathematics *et cetera* for the princely sum of a few shillings a quarter.

David Paton attended his father's school till thirteen years of age, when his father died. A streak of laziness combined with ill-health (he was very frequently allowed to escape the mathematical period for this reason, it being his strong subject) prevented him from doing all he might have done. From a high, but perhaps mistaken, sense of honour he was never given help of any kind in his studies by his father, but after his death his mother told him that he had said to her: "Many clever boys have passed through my hands, but our boy is the smartest

of them all." After his father's death, which occurred at the early age of forty-one years from phthisis, David Paton attended the Union Street School, Kilmarnock, of which he became *dux* in 1870. His mother had been left a widow with a very slender income and a family of nine children, of whom David was the eldest, aged thirteen years. Thus the whole course of his life was altered. As a child he acquired a nasal and bronchial catarrh after an attack of scarlet fever, which remained with him all through life and largely contributed to the shaping of his career.

After leaving school he was apprenticed to the softgoods trade, and in 1874, at the age of eighteen years, was sent out to Australia for his health and given two years to live. He remained in business till 1885. In the meantime his three brothers, having graduated from the Glasgow University (one in medicine and two in law), he himself decided to take up medicine. In 1885 he sailed for Scotland with his wife and three children (the eldest three years of age) with this end in view. One can only admire the audacity of the project, as his financial resources were very limited, and he made no preparation for failure. After an absence of fifteen years from school he successfully passed the necessary entrance examination and entered Saint Mungo's College, Glasgow, not being able to finance a university course. Among seventy entrance candidates, three of whom obtained honours, he took second place. Part of his course was taken at Anderson College.

The climate again seriously affecting his health, special privileges were accorded to him and he was allowed to take all classes for first and second years in the first twelve months. Among his teachers were Sir William Macewen, whose prize he took in surgery, Professor Samson Gemmell, Professor Glaister, and others. His chief in the Children's Hospital was Sir Hector Cameron.

All through his course he took a high place in the class lists, frequently taking first place, but, his health failing him very badly, he had to content himself with qualifying L.R.C.P., L.R.C.S. (Edinburgh), L.F.P.S. (Glasgow), and was compelled to return to Australia in 1889.

He started practice in South Melbourne in 1889, where he obtained an appointment for the Manchester Unity Independent Order of Oddfellows Lodge, which served as a foundation for a general practice. In 1893 he bought Dr. William Warren's practice in Studley Park Road, Kew, where he practised for twelve years in conjunction with consulting rooms in Collins Street.

His health again failing, he went to Great Britain for a twelve months' trip. On his return in 1906 he settled in Malvern, where he remained till 1926, when he retired from active practice. A third trip to Great Britain and the Continent was taken in 1929.

He was a born radical and ever found it difficult to confine himself to a beaten track. Thus, after reading an article on anti-diphtheritic serum in a medical journal in 1897 he made a clinical experiment of the oral use of the serum in the treatment of sepsis which was successful. This was followed by many other successes, and after years of patient investigation he found that it produced results which were contrary to all accepted ideas. He published his first temporary conclusions in the *Australian Medical Journal* of February 2, 1902; also three books, "New Serum Therapy", 1906, which contained records of 276 cases, "Hormone Therapy", 1922, "The Septic Problem and Immunity", 1927. These he looked upon as progressive statements of his conception as it unfolded, but criticized some of his writing in later years as "trying to cut his way through a wood".

Dr. Charles McLaren, in another connexion, speaks of misunderstanding being caused by a partial or unfinished presentation of a subject, it not having been thought through to a clear final issue. Dr. Paton endeavoured to reach this position in his latest and last book, now in the publisher's hands. This was written in his seventy-ninth year.

Dr. J. Sandison Yule writes:

Dr. D. M. Paton was the arch-heretic of Victorian medicine. My earliest contact with him was when I was a resident surgeon at Melbourne Hospital in 1900; it took

the form of a bottle of pink medicine which one day made its appearance in a surgical ward beside a suppurative case belonging to the late Mr. R. A. Stirling. I was informed that it was "serum" and was to be given orally.

This was indeed a novelty, and further inquiry elicited that a strangely deluded practitioner, one Paton, asserted that antidiphtheritic serum given by the mouth cured sepsis. With tolerant superiority and unbounded scepticism I obeyed instructions, knowing well that to use a specific serum for an entirely different ailment was a waste of time, while to use any serum orally was futile. True the patient recovered, but she might well have done so in any case, and I thought not at all about Dr. Paton till I chanced to take rooms in 1906 in the same Collins Street building as he. A plentiful lack of patients on my part led me to listen frequently to Paton's statement of his experiences and views. Gradually it became clear that here was no mistaken enthusiast, let alone a charlatan, but one who had really made a great discovery.

Not only was Dr. Paton securing results with the oral use of serum, but he had a theory of its mode of action and limits. This theory had one most desirable quality in that it enabled one to know with very fair accuracy in which cases serum would succeed or the reverse.

In these earlier years the profession would have none of Paton's serum nor of his theory. Indeed some most unfair attempts were made to have him blacklisted as the purveyor of a secret remedy. Since he never had made the least secret of the identity of his serum, this naturally embittered him for a while. He felt that the hands of those who should have applauded were against him for some personal reason. As time passed this feeling was modified, partly since time heals all hurts and partly because he saw his serum being taken up and used widely throughout Victoria. I understand the Commonwealth Serum Laboratory sells hundreds of litres annually. Indeed the attitude of the profession today is expressed in the words of a prominent Melbourne laboratory worker: "We accept your serum, but reject your theory."

Yet this is unjust to Paton. He had a most original mind; his work was his hobby, and he was always looking for the explanation of every clinical fact or appearance. So his theory (in which the oral use of serum played only a small part) was necessary to his mind to enable him to progress. Indeed it did and does explain much in physiology and medicine that the conservative views leave obscure. (Briefly it postulates a deep antagonism between the lymphatic and the blood-endocrine systems, with resulting constant regulation of the latter.)

Regrettably the successful users of serum seldom acknowledged their debt to Dr. Paton; he used to quote Sir William Macewen as saying to his students: "Gentlemen, if you discover anything new, make sure of it and then publish. You will be received with the bitterest contempt, but after many years someone abroad will test your work and find you were right. Finally your discovery will come back to Britain and be credited to someone else!" (I quote from memory.)

Dr. Paton personally was a most genial and brotherly man, with plenty of good Scottish humour to cushion the bumps of life. His round and rosy face, with its large forehead, usually had a smile to welcome patient or friend. As colleague, and for a brief time partner, I found him always ready to help or do a good turn in time of need. An apparent aggressiveness of manner at times was, I am sure, accounted for by a feeling that he had been unjustly treated and had to fight all alone.

His work was his very life, and after retiring from active practice in 1921 he kept his interest in all that concerned it, attending laboratories to experiment, writing papers and publishing a book in 1927, while his "Swan-Song" (another book) is even now in the press.

Apart from his lifelong interest in the Presbyterian Church, in which he was an elder, the Young Men's Christian Association and some kindred Christian activities, he spared no time for outside occupations or recreations. He is mourned by many to whom he did good, not only medically, but morally and spiritually.

JOHN STEWART MERRILLEES.

We regret to announce the death of Dr. John Stewart Merrillees, which occurred at Hawthorn, Victoria, on March 19, 1935.

NOTICE.

THE Officers' Mess of the Australian Army Medical Corps, Second Military District, will hold its annual meeting at the Imperial Service Club, Barrack Street, Sydney, at 8.30 p.m. on Thursday, April 11, 1935. Following the conclusion of the business of the meeting, Professor A. H. Charteris, Professor of International Law in the University of Sydney, will give a short address on certain aspects of modern international problems.

The annual dinner of this mess will be held at the Imperial Service Club, Barrack Street, Sydney, at 7.15 p.m. on Friday, May 31, 1935. It is probable that His Excellency Sir Alexander Hore-Ruthven, V.C., will be present, and representatives of the other arms of the services will also be guests of the mess. Every member of the mess and all officers of the Australian Army Medical Corps, Second Military District, are asked to make a special point of attending this function.

THE attention of members of the Victorian Branch of the British Medical Association is directed to the George Adlington Syme Memorial Lecture, which will be delivered by Dr. B. T. Zwar at the Medical Society Hall, East Melbourne, on Thursday, April 11, 1935, at 8.15 o'clock p.m. The title of the lecture will be "Syme and Medical Education".

Diary for the Month.

- APR. 5.—Queensland Branch, B.M.A.: Branch.
 APR. 9.—Tasmanian Branch, B.M.A.: Branch.
 APR. 9.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
 APR. 11.—New South Wales Branch, B.M.A.: Clinical Meeting.
 APR. 11.—Victorian Branch, B.M.A.: George Adlington Syme Memorial Lecture.
 APR. 12.—Queensland Branch, B.M.A.: Council.
 APR. 16.—New South Wales Branch, B.M.A.: Ethics Committee.
 APR. 16.—Tasmanian Branch, B.M.A.: Council.
 APR. 17.—Western Australian Branch, B.M.A.: Branch.
 APR. 23.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 APR. 24.—Victorian Branch, B.M.A.: Council.
 APR. 24.—New South Wales Branch, B.M.A.: Branch.
 APR. 25.—South Australian Branch, B.M.A.: Branch.
 APR. 26.—Queensland Branch, B.M.A.: Council.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser", pages xvi-xviii.

- AUSTIN HOSPITAL FOR CANCER AND CHRONIC DISEASES, HEIDELBERG, VICTORIA: Resident Medical Officer.
 CANTERBURY DISTRICT MEMORIAL HOSPITAL, CAMPSIE, NEW SOUTH WALES: Medical Superintendent.
 CHILDREN'S HOSPITAL (INCORPORATED), PERTH, WESTERN AUSTRALIA: Junior Resident Medical Officer.
 DEPARTMENT OF MENTAL HYGIENE, MELBOURNE, VICTORIA: Junior Medical Officer.
 PUBLIC SERVICE BOARD, SYDNEY, NEW SOUTH WALES: Junior Medical Officers.
 RENWICK HOSPITAL FOR INFANTS, SYDNEY, NEW SOUTH WALES: Honorary Relieving Assistant Surgeon.
 SYDNEY HOSPITAL, SYDNEY, NEW SOUTH WALES: Honorary Relieving Assistant Surgeon.
 THE RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, SYDNEY, NEW SOUTH WALES: Honorary Officers.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phoenix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associate Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointment and those desiring to accept appointments to any COUNTRY HOSPITAL, are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	Office of Health, District Council of Elliston. All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 205, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor", THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales. (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility or recognize any claim arising out of non-receipt of journals unless such a notification is received within one month.

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and book-sellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad per annum payable in advance.